DOCUMENT RESUME

ED 099 235 SE 018 448

TITLE [Land Use Unit, Edmonds School District.]
INSTITUTION Edmonds School District 15, Lynnwood, Wash.
PUB DATE [74]
NOTE 125p.

EDRS PRICE MF-$0.75 HC-$5.40 PLUS POSTAGE
DESCRIPTORS Biological Sciences; Conservation Education; Ecology; Educational Programs; *Environmental Education; Games; *Instructional Materials; Interdisciplinary Approach; *Land Use; *Learning Activities; Natural Resources; Outdoor Education; Population Education; Science Education; *Secondary Grades; Simulation
IDENTIFIERS Land Use Planning

ABSTRACT

This interdisciplinary program, developed for secondary students, contains 18 land use activities that can either be used directly in, or as a supplement to, curriculum in Science, Biology, Horticulture, Mathematics, Social Studies, English, Industrial Arts and Physical Education. The topics to be investigated include: land use simulation games, land use planning and decision making, small area plots, land use alternatives, microflimates, flood management and local population control. Each learning activity includes: subject area and grade level for which it can be used, level VI objectives, time schedule for prelab and performance of the activity, background information for the teacher and a listing of materials needed. A land use bibliography and a listing of audio-visual materials are included. (BT)

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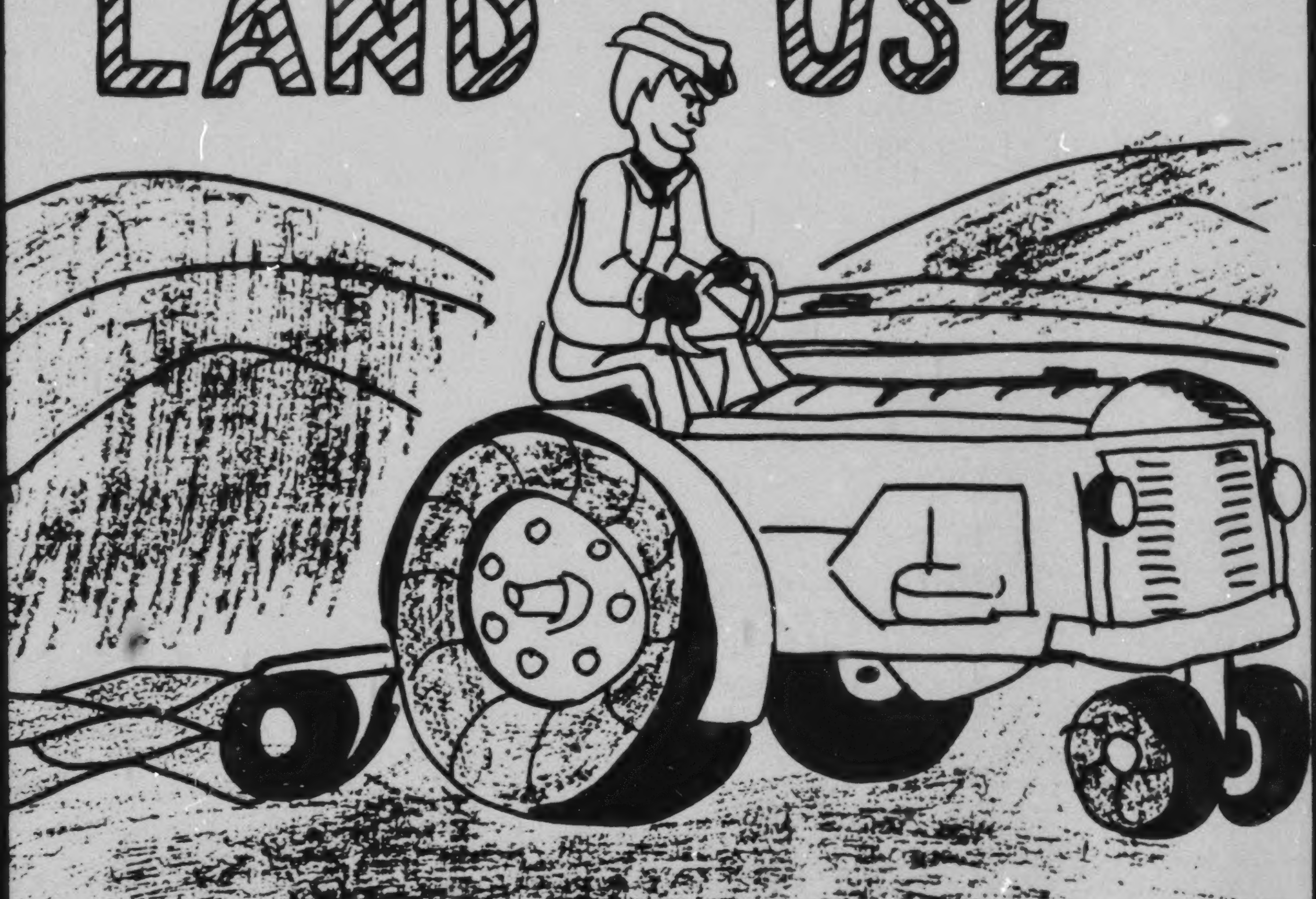
LAND USE



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LAND USE UNIT

LEVEL VI OBJECTIVES

The student will be able to prepare an Environmental Impact Statement for a given site.

The student will be able to determine the average daily pupil walking distance to school.

The student will be able to make two recommendations from comprehensive citizen data.

The student will be able to suggest at least three solutions to urban transportation problems.

The student will understand that transportation networks constitute a major land use category.

The student will know that the transportation system can have a significant influence on environmental quality, especially in urban areas.

The student will understand the meaning of "wilderness".

The student will be able to decide which possible land uses are compatible with wilderness classification.

The student will know how man made structures can alter the temperature of a local area.

The student will recognize parking space as a significant urban land use category.

The student will know that a given area of ground contains a great diversity of living things.

The student will be able to develop a comprehensive land use plan.

The student will know at least four physical properties which soil must have for effective production of food.

The student will know the basic operating policies of:
  a. National Parks
  b. Wilderness Areas
  c. National Forests
  d. State Recreational Lands
  e. State Forest Reserves

LAND USE UNIT

LEVEL VI OBJECTIVES - CONT'D:

The student will know how the public uses National and State land areas.

The student will be able to develop two alternative solutions to an urban environmental land use problem.

The student will know the percentage of land space that is used for parking facilities in a given area.

The student will know the percentage of undeveloped (open-space) land in his local community.

The student will know which groups tend to push land into development.

The student will know three specific values of open-space land.

The student will be able to produce three alternate solutions to existing pollution problems caused by automobile transportation.

The student will know what the optimum population is for a particular land area.

The student will know three effects which population growth has on a local municipality.

The student will know three principal activities used in recreational or free time by a sample of families in the local community.

The student will be able to offer two alternative solutions to problems of overcrowded recreation facilities.

The student will know the following alternatives for management of floodplains: floodplain zoning, flood insurance, levies, dams, and industrialization.

LAND
USE

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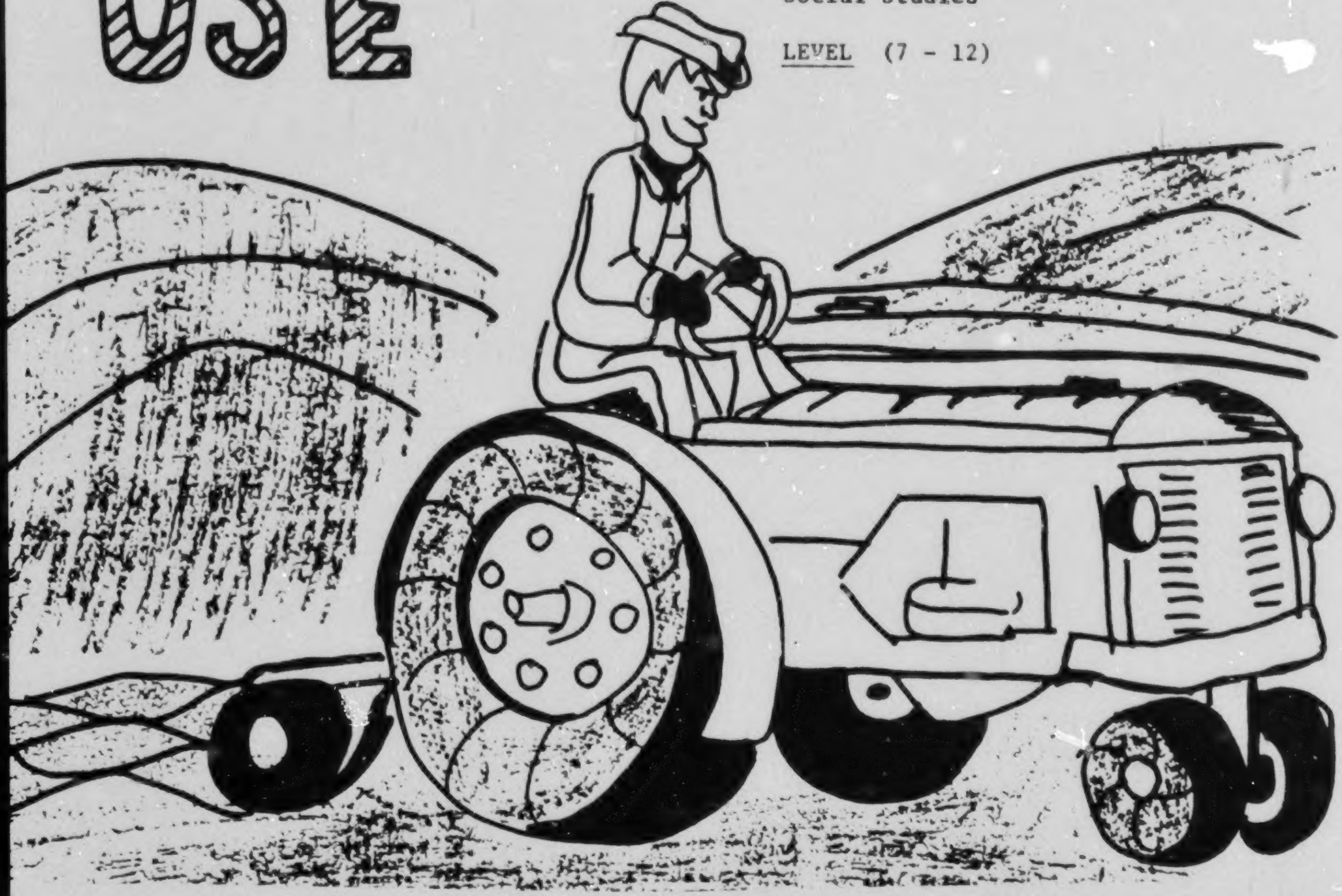
SUBJECTS

English
Industrial Arts
Science
Social Studies

LEVEL (7 - 12)



EIS GAME

LAND USE

Environmental Impact Statements (EIS) are now required by law for all proposed projects which may have an impact on the environment.

LEVEL VI OBJECTIVE

The student will be able to prepare an Environmental Impact Statement for a given site.

OBJECTIVES

TEACHER INFORMATION

The intent of this exercise is to have students become familiar with how the governmental agencies which are directly concerned with the environment, operate in attempting to control and improve ecological conditions. This provides just a skeleton of an idea which may be greatly expanded as the class and time dictate.

One possibility is to present certain data collected from a mythical or real site and have the students use the Environmental Protection Agency federal guidelines to prepare an EIS for review by the pseudo-Department of Ecology.

This situation is not a simulation game, but an exercise in writing the EIS. Evaluation of the exercise is via the hearing board. An example is included.

Another possibility would be to identify some area close to the school, which would be the simulated location of some proposed change. The students would be divided into "Consultant" teams, and each team would collect its own data and prepare its own EIS. An example is included.

A follow-up of these activities would be to obtain various EIS's which have been prepared for existing projects and compare or make an evaluative study using the latest EPA guidelines. Suggested sources would be:

- City of Seattle;
- State Department of Ecology;
- Civil Engineering;
- Department of Air & Water Resources;
- Dr. Rossand, University of Washington.

Included are:

- Excerpts from EPA guidelines, though a copy can readily be obtained by calling the local office;
- An example of a simulation game; and
- Some easy tests to conduct to collect field data.

MATERIALS

Various testing kits
Sample bottles as the need arises

REFERENCES

Environmental Impact Statement Guidelines, Revised Edition, April 1973, Environmental Protection Agency.

PRE - ACTIVITY

1. Present the background of governmental action regarding improving and safeguarding the environment, "What are some things the legislature (government) has done to protect the environment?"

2. Depending on the response to the above, include questions about interest groups influencing environmental measures, means to punish offenders, the long range outlook. Lead into the need for thorough study of an area which is proposed for some change - need for environmental statements.

ACTIVITY

1. Study the suggested guidelines for preparing an Environmental Impact Statement.

2. Either by simulation or in actuality, carry out the research and write an EIS.

POST ACTIVITY

Evaluate the statement by having a panel representing the Department of Ecology examine and question the preparers. Determine strengths and weaknesses in long range planning.

Determine if "people needs" are being met without undue damage to the existing ecological conditions.

In going further--actual EIS may be obtained from various sources for examination by the panels.

EXAMPLE

AN EIS EXERCISE: PICNIC POINT PARK

INTRODUCTION

A point of land on nearby Puget Sound has been a favorite informal beach spot for a number of years. The area is easily accessable, but private property must be crossed, which is a railroad track. This point is one of the few beach areas along Puget Sound from Edmonds to Everett. Thus it is in demand as a recreation site.

At a previous series of meetings, it has been decided by various agencies that Picnic Point should be proposed as a recreational beach site. According to state law, if a proposal to possibly alter the existing environment is made, an "Environmental Impact Statement" must be prepared, responsibility for preparation resting with the proposer, and reviewed by the Department of Ecology. The recommended outline for preparing this EIS is included.

A. INTEREST GROUPS

1. Park Department:
   The area is already being used and abused. If developed, it would be safer, the general ecology better preserved, and provide a much-needed beach recreation site for south Snohomish County.

2. Burlington-Northern Railroad:
   This particular section of track is heavily used and is a hazard to those using the beach. A proposed pedestrian underpass would reduce the danger element as well as reduce our liability.

3. Nearby Home Owners:
   The parking area has been a dusty or muddy sore spot. To the east of the proposed parking site, trash has been dumped into the stream. Even though improving the site will increase the traffic, we feel that by having some guidelines for use and enforcement we will have a nicer beach to use.

4. Conservation Groups:
   Since the beach is already being used, development is inevitable. All we are concerned with is that development be compatible with the natural environment. The fauna and flora of the beach area as well as terrestrial areas must be protected and the beach use limited. Provision must be made to keep the stream uncontaminated. The beach rest room sewage must be treated.

B. PROPOSED PARK DEVELOPMENT - See map included.

The proposed development of Picnic Point Park includes the following actions:

1. Park Board regulations making illegal the following:
   camping
   horseback riding
   motor vehicles
   log cutting
   clam digging
   fires except in designated facilities
   unleashed dogs
   excessive noise and congregation
   pop-open cans and
   any general disruption or destruction of
      vegetation
      soils
      sands
      facilities or
      logs.

2. Construction and maintenance of the following:

   a. Asphalt parking lot for 48 cars, with bus turn around and drop-off.

   b. Concrete restroom facility.

   c. Pedestrian railroad underpass 35'

ACTIVITY

long, 10' wide, 8' clearing, 4' below tracks.

   d. Sandy picnic spaces on portion between beach and railroad.

   e. Gravel fill to protect existing trees along railroad tracks.

   f. Related walkways.

   g. General landscaping to provide cover.

   h. Establish settling basin in Picnic Creek just east of railroad tracks.

3. Design considerations relative to park environment:

   a. Sewage disposal from restrooms would ideally be accomplished by constructing a lift station and force main to transfer sewage to the Alderwood Treatment Plant. This treatment plant is currently under construction approximately 3600 feet from the proposed restroom location.

   b. Parking lot catch basins will be provided with catch basins to prevent hydrocarbon runoff into Picnic Creek. Flow increments in the creek due to increased runoff from the parking lot are considered to be minor.

C. THE ENVIRONMENT

1. Physical environment:

   a. Beach is a sandy-gravel.

   b. Creek cuts through park area and empties into Sound.

   c. Parking lot has already been graded

2. Biological environment:

   a. Intertidal
   Mostly seaweed attached to the large pebbles and boulders. Associated with the seaweed are animals which eat it, and predators. It serves as a habitat for the young of several types of animals. In the sand-gravel are various types of clams. A number of water birds feed in this area.

   b. Terrestrial:
   Area was formerly made up of Western Red Cedar and Hemlock. Since the logging, the Bigleaf Maple, Red Alder, and lots of various kinds of berries and flowers have settled in the area, with only a few conifers.

3. Stream:
Fast flowing, not very wide or deep. During flooding it carries silt from bank cuts, sand, and some larger debris. The water is generally clear and of high water quality except for an elevated number of Coliform bacteria, roughly 2 or 3 times the number considered safe for human use.

D. HEARING BOARD

This group studies each statement to determine if the quality of the environment will be unchanged or improved and nothing detrimental will occur. Use of the EPA Guidelines will help in seeing whether the Statement has been thoroughly done.

ACTIVITY

EXAMPLE

PREPARATION OF AN EIS FROM A STUDY SITE

INTRODUCTION

1. Why is a study of the site necessary before the Condominium is OK'd by the Department of Ecology?

2. What environmental factors would be important to measure in preparing a report?

3. How would these factors be mentioned?

4. What is meant by "short-term impact" and "long-term impact"?

A. BACKGROUND INFORMATION

Read and study the EPA Guidelines.

B. FIELD STUDY

For detailed methods, see source books such as the Contours series, Soil Ecology, and Terrestrial Ecology.

Collect data as suggested by the Guidelines.

1. What biological resources are there? Water resources?

2. How have biotic communities adapted to the physical environment?

3. Take a soil sample (core, if tools available). Describe the soil for several feet. Find out about the ability of the soil to 'perk'.

4. Describe all natural resources.

5. Measure air quality. (Check on standard. See other activities for measuring air quality.)

6. Describe climatic conditions in area.

   a. What is average rainfall?

   b. What are seasonal temperatures?

   c. How many days are sunny?

7. Map the access routes to the site.

C. IMPACTS

A condominium of 100 units, 2 story, is proposed for the area. There are a sewage line and a water line nearby. There will be excavations for basements, and all existing timber will be removed. Landscaping of the proposed site will be done upon completion of the building.

1. Draw a typical layout for this proposed condominium.

2. Prepare Impact Statement based upon Guidelines and the layout of the proposed project. Be prepared to submit it for review by the Department of Ecology.

EPA GUIDELINES

PLANNING UNITS

A planning unit describes long-term multiple use objectives and policies for a specific land tract, including the allocation and values of resources. The plan provides guidance to a district manager for an area, based on existing inventories and knowledge of how a land tract can be managed, utilized, and protected. It addresses such resources as recreation, timber, watersheds, mining, and wildlife. The compatibility of these resources to each other and to existing conditions defines the suitability of activities that will be allowed. A planning unit may be considered as an initial concept that will be developed into precise descriptions of proposed activities.

Once a detailed planning unit for an area has been devised, an environmental impact statement can be prepared. Specific details of the proposed land use plan and its probable impacts are essential to an evaluation of an environmental impact statement.

PLANNING UNIT GENERAL GUIDELINES

I. DESCRIPTION

- A. Describe in qualitative and quantitative terms all biological resources and water resources. This discussion should include how the biotic communities have adapted to the physical environment, and should also include the hydrologic cycle of adjacent water bodies.
- B. Describe the soil characteristics and geology in the project area.
- C. Describe all natural resources in the project area, including wilderness areas. The statement should recognize that these wilderness areas are a diminishing resource.
- D. Describe existing air quality and any applicable standards or regulations.
- E. Include graphic and pictorial information.
- F. Describe meteorological conditions in the area.
- G. Describe past, present, and proposed land use.
- H. Describe accessability to planning area. Include transportation plans.

II. ENVIRONMENTAL IMPACTS

- A. Discuss impacts which may occur to to water quality, air quality, noise, solid waste disposal, and pesticide use.
- B. Discuss the impacts the project will have on the physical environment such as soils, geologic formations, hydrology, drainage patterns, etc.
- C. Discuss methodology to be used to minimize adverse environmental impacts.

III. ALTERNATIVES

- A. Discuss the full range of management alternatives considered in the course of planning the action.
- B. Discuss why the proposed alternative was chosen.
- C. Discuss alternatives in sufficient detail so reviewers may realize secondary or long-term environmental impacts.

IV. SHORT-TERM USES VS. LONG-TERM PRODUCTIVITY

- A. Discuss environmental cost as it relates to short-term uses and long-term productivity.
- B. Discuss how actions taken now will limit the number of choices left for future generations.

ACTIVITY

V. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Discuss resources to be utilized and what the replacement potential of these resources is.

ACTIVITY

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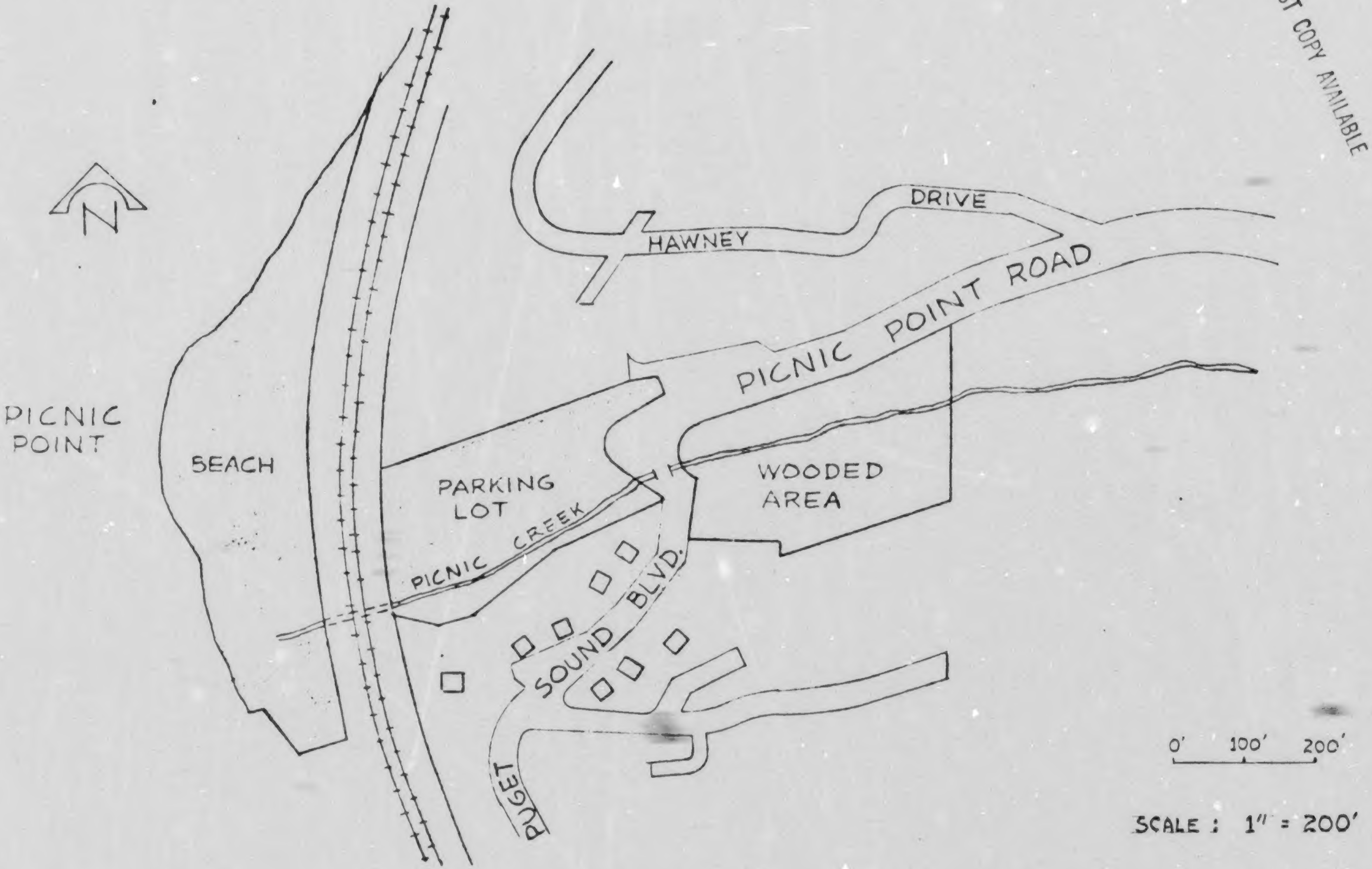

PICNIC POINT PARK - PARK AREA IS SHADED

After Lee Johnson & Assoc. Study – "Picnic Point Park"

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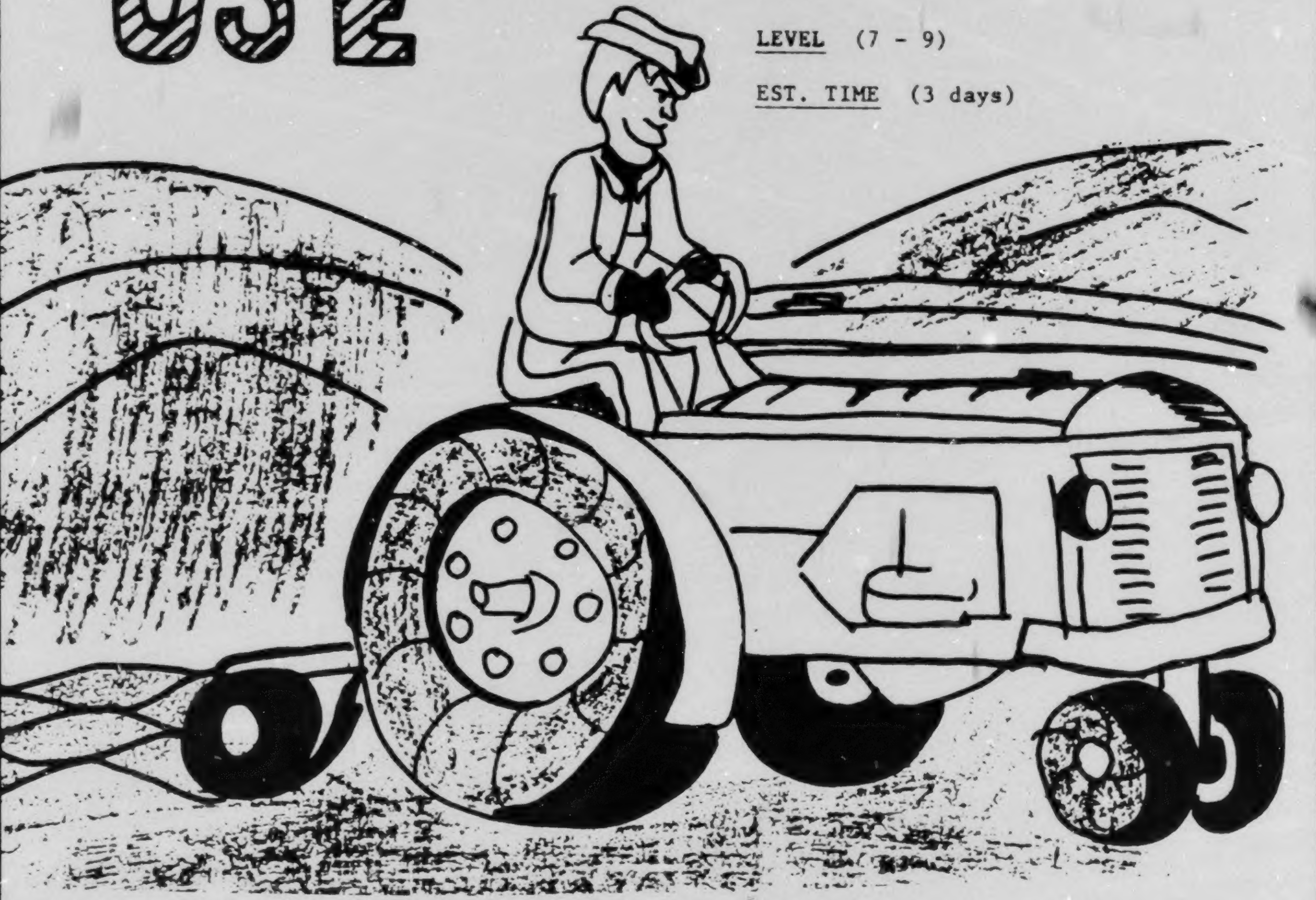
LAND USE

SUBJECTS L-2

Social Studies
English
P. E.
Math
Other

LEVEL (7 - 9)

EST. TIME (3 days)



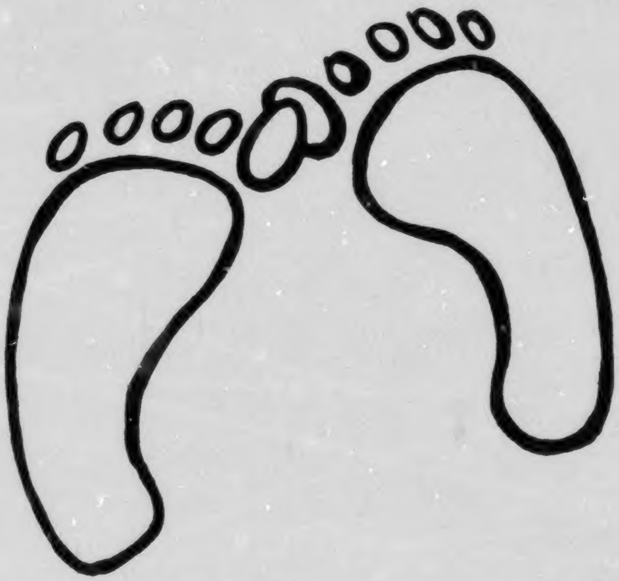
"FEEL LIKE WALKING?"

HUMAN RESOURCE - FEET

TRANSPORTATION

SURVEY - TYPE ACTIVITY

*The average person walks a maximum of 5/8 mile in an urban community in order to reach his destination or to board a vehicle.



LEVEL VI OBJECTIVE

The student will be able to determine the average daily pupil walking distance to school.

*Statistical evidence.

This is a fun activity which can involve a few students, a class of students, or the entire student body.

It could be done by first having the Social Studies students report on the modes of transportation available and used in your area, and the effects of transportation on individuals, the community, pollution, etc. The P. E. class could then find information dealing with the amount of exercise needed for different age groups and the health effects walking has on people. The Math department could continue this by taking a survey of how many students walk to school and how far they walk. The statistics could be posted in the school hall for all to see. An English activity could evolve around all this also, by having students write an evaluation of these activities. Perhaps the best could be chosen for print in the school paper.

MATERIALS

City map or
Map constructed of your community

ACTIVITY

Determine:

1. How many blocks do you walk to school or to catch the bus?
2. What is the class average of the distance for each student who walks?
3. What is the school average? (This could be determined by taking a survey of a portion of the student body.)

SAMPLE SURVEY

How do you get to school (most of the time)?
Check one:

Ride bus	
Ride bike	
Ride in car	
Walk	
Other (How?)	

How far do you travel?
Check one:

1/4 Mile	
1/2 Mile	
3/4 Mile	
1 Mile	
1-1/4 Miles	
1-1/2 Miles	
1-3/4 Miles	
2 Miles	
2-1/4 Miles	
2-1/2 Miles	
2-3/4 Miles	
3 Miles	
3 Miles +	

SAMPLE EVALUATION

Miles	1/4	1/2	3/4	1	1-1/4	1-1/2	1-3/4	2	2-1/4	2-1/2	2-3/4	3	3+
Bus													
Bike													
Car													
Walk													
Other													

ACTIVITY

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LAND USE

SUBJECTS L-3

Social Studies
History
Science

LEVEL (7 - 12)

PSGC

LAND USE

SIMULATION GAME

LAND USE DECISION

The simulation game is an extremely useful tool for getting each student involved in a problem-solving game. (See diagram for simulation game.)

LEVEL VI OBJECTIVE

The student will be able to make two recommendations from comprehensive citizen data.

OBJECTIVES

The teacher should understand the idea of the simulation game. Have citizens' groups' names on cards, with some facts about each group, especially what it has done for the community. Teacher will assign one member from each group to comprise a council which will come to a final decision.

The Bureau of Land Management carries out classifications of public lands with public guidelines. (It is assisted by Advisory Boards composed of local citizens representing a wide variety of interests.)

DIAGRAM FOR SIMULATION GAMES:

Problem

↓

Interest groups (specified roles placed on cards, played by students)

↓

Interaction within and between groups.

↓

Council (moderators)

↓

Decisions (ultimately made by the council)

MATERIALS

Map of Snohomish County
Chart (see activity)

Teacher may wish to reserve the library for a part of the time required for this game.

ACTIVITY

Citizens' groups will fill out the chart. Then, using the information they have gathered, they will come to a final conclusion that will be presented before the council:

This land in question might be suited for____.

The reason(s) for our decision is (are):____.

Chart, to be filled out by citizens' groups:

Features	Information	Comment
Location		
Topography (slope)		
Type of soil		
Water features		
Accessability (highways)		
How remote		
Types of flora		
Climate (annual precip.)		
Drainage		
Physiographic type		
Adjacent to population site?		
History of economic growth		
Zonation		
Other features		

LAND USE

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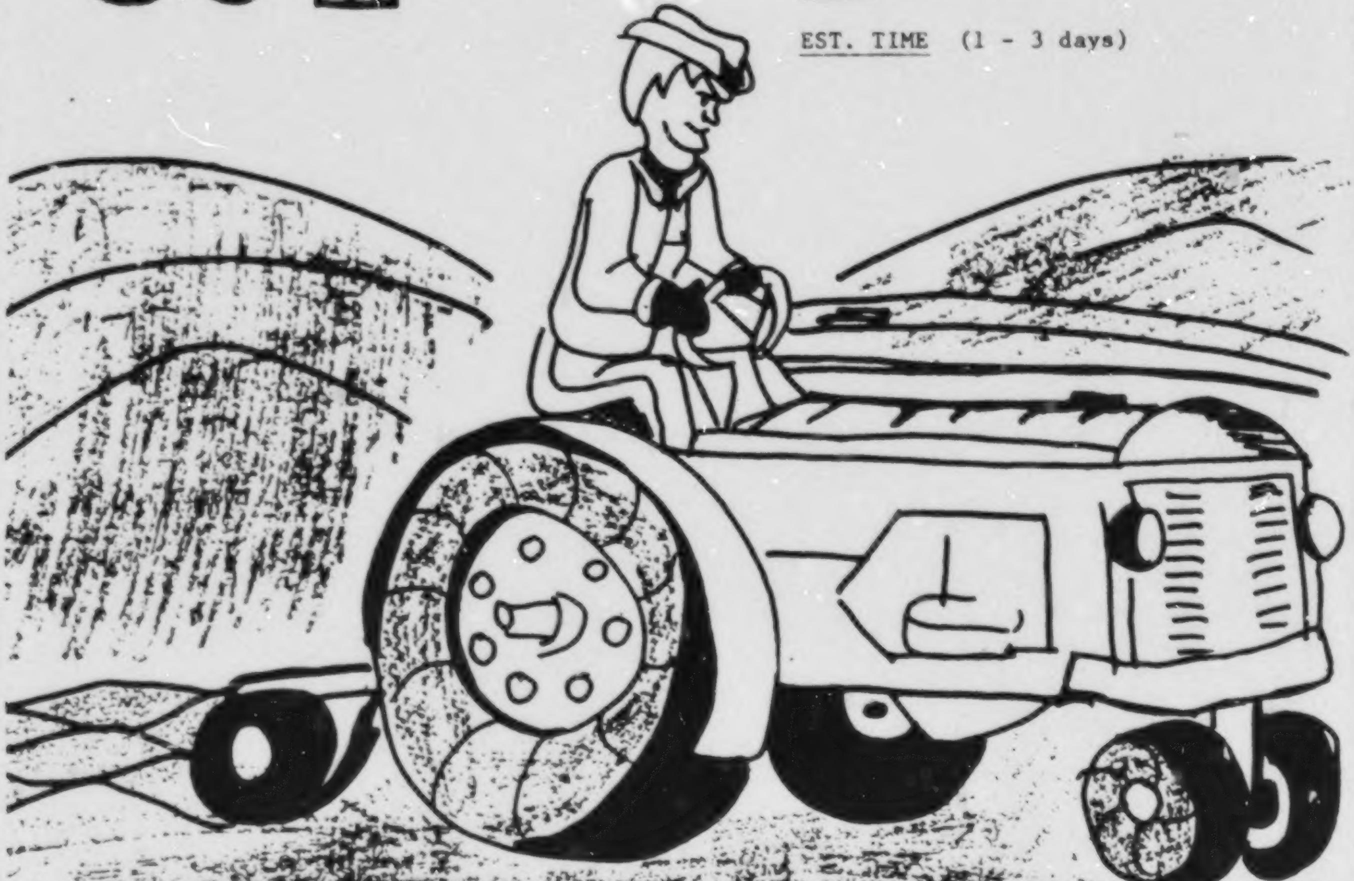
SUBJECTS L-4

Social Studies
Auto Shop
Mechanical Drawing

LEVEL (7 - 12)

EST. TIME (1 - 3 days)



DESIGNING A TRANSPORTATION SYSTEM

LAND USE

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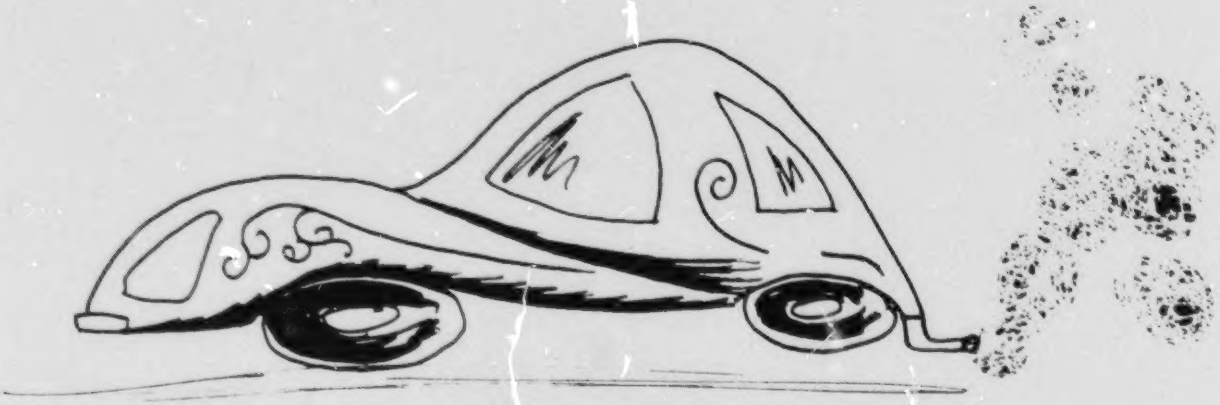
Could a well designed city eliminate some of the air pollution and transportation problems faced by urban centers today?



LEVEL VI OBJECTIVES

The student will be able to suggest at least three solutions to urban transportation problems.

The student will understand that transportation networks constitute a major land use category.

The student will know that the transportation system can have a significant influence on environmental quality, especially in urban areas.

OBJECTIVES

For this activity, you should first discuss the transportation system in your community with the students . You will need maps of the area, which can be obtained through the city planning department. By using your school library (obtain a bibliorgaphy of environmental resources from your librarian) the students should be able to answer the questions for the pre-activity. You may want to divide the class into groups to research various aspects of transportation.

The students could also go on site and record the various types of transportation they see at different sites in the community. They may also want to see what plans the city has for improving transportation in the area (city planners).

They can then design their own transportation system, perhaps even a new type of automobile.

TEACHER BACKGROUND

PRE - ACTIVITY

Discussion:

1. What types of transportation do we have in our community? (See activity on types of transportation.)

2. Which types are pollutants? Which are not?

3. What possibilities are there for change in our community?

Pass out maps:

4. Are there enough roads for the number of cars that use them?

5. Are there adequate sidewalks for pedestrians? Bikes?

6. Are there adequate ramps to and from freeways?

Research:

1. What percentage of pollution in your city is caused by automobiles?

2. Does a car at 50 mph generate more or less pollution on a stop-start basis, per mile driven?

3. Investigate what different transportation facilities run on.

ACTIVITY

In groups:

1. Take a map of the area and mark out what community patterns should be made. What should be where? What would be the best transportation system?

2. Design a transportation system for your city which would accommodate the greatest number of people at the least cost to the environment.

LAND USE

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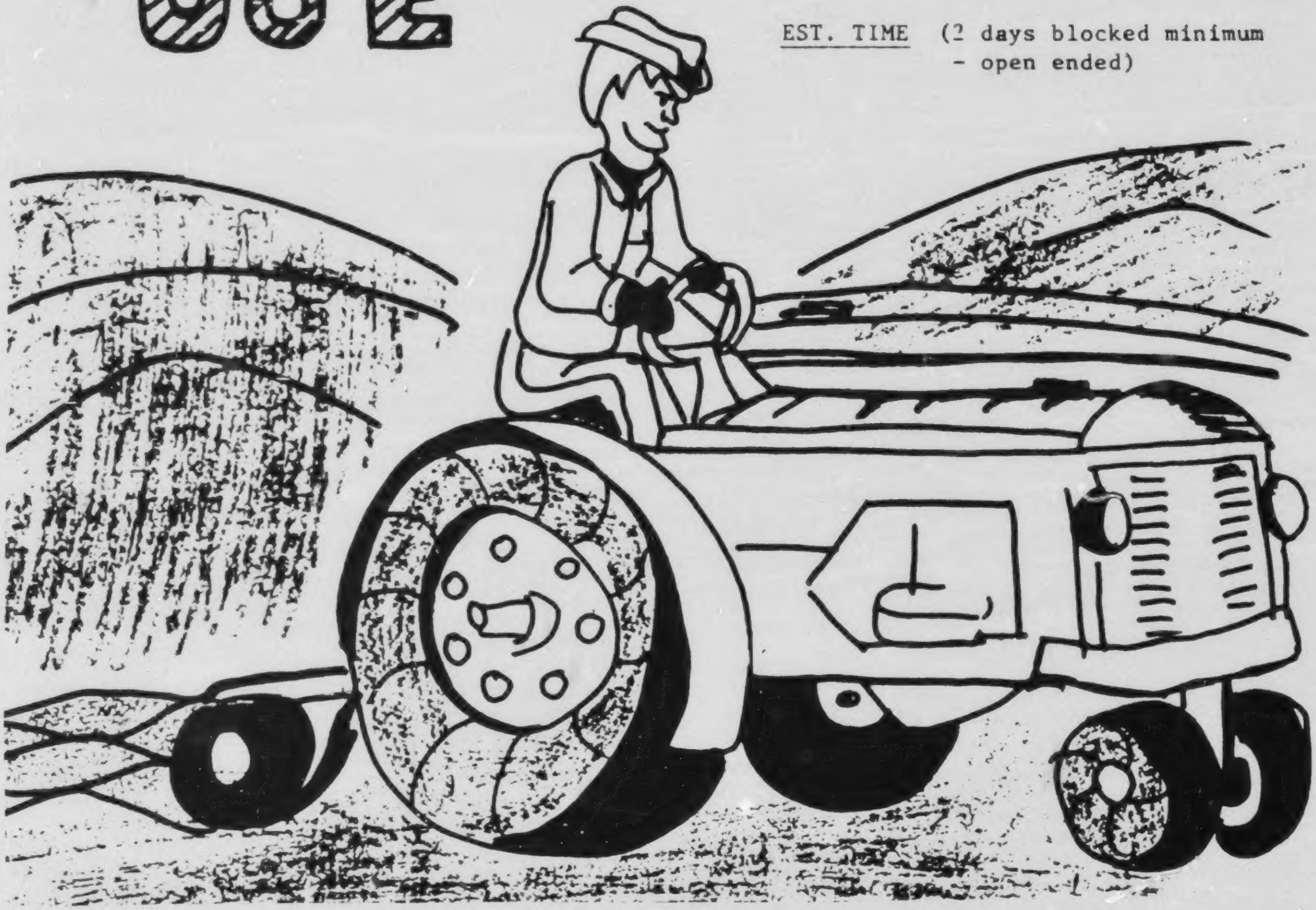
SUBJECTS L-5

Social Studies
Biology

LEVEL (9 - 12)

EST. TIME (2 days blocked minimum
- open ended)



ALPINE LAKES-LAND USE ALTERNATIVES

LAND USE

WILDERNESS AREAS AND VALUES

Pressures for conflicting land uses are often put on our public lands. Land use classification can become a very complex problem for management agencies such as the Forest Service, which attempt to accommodate many diverse users of the land.

LEVEL VI OBJECTIVES

The student will understand the meaning of "wilderness".

The student will be able to decide which possible land uses are compatible with wilderness classification.

OBJECTIVES

A complete and readable presentation of the issue was made by the Forest Service Study Team in their information-questionnaire, Alpine Lakes Land Use Alternatives. Obtain 3 or 4 copies from the Educational Services Center Professional Library for reference. Each pamphlet contains three maps of the area showing three alternative management plans (A, B and C), as well as background information, management objectives, definitions, and comparisons of the three alternatives.

The Forest Service has already collected public input on the three alternatives at public hearings and by mail, and will soon present its own recommendation, which will probably be a combination of two or more of the original alternatives.

REFERENCES

Alpine Lakes Land Use Alternatives, Snoqualmie and Wenatchee National Forests, 1972. At least 4 copies are available from the Educational Services Center Professional Library, Environmental Reference Collection.

RESOURCES

Alpine Lakes Protection Society (ALPS)
2295 NE 60th, Seattle, Wash. 98105

Snoqualmie National Forest
1601 2nd Ave. Bldg., Seattle, Wash. 98101

PRE - ACTIVITY

Class Discussion: Define the study area, show maps to the class, etc.

Start with leading questions:

1. How many of you have used the Alpine Lakes Region?
2. How do you use the area? Make a list of different uses (fishing, hiking, camping, wilderness backpacking, climbing, cross-country skiing, motorcycling, snowmobiling, etc.) and mark numbers of students taking part in each activity. If no one in the class has ever used the area have them list all the possible uses they can think of.
3. Consider possible commercial uses of the land (logging, mining, etc.) and add these to the class list of personal land uses.
4. Try to put yourself in the place of each of the different users you have listed. Which of the other uses would conflict with your preferred use of the same land? Which of the uses appear to be compatible?

   A conflict matrix such as the following could be used:

x = Minor annoyance

X = Definite conflict

	Backpacking	Horse-packing	Motorcycling	Cross-country Skiing	Logging	Etc.
Wilderness backpacking		x	X		X	
Horse-packing						
Motorcycling						
Cross-country skiing						
Logging						
Etc.						

Fill in conflicts

5. Based on the class list of possible land uses, make up a list of Interest Groups that would be likely to promote or represent each of the major uses (e. g., A.L.P.S., Friends of the Earth, Sierra Club, Mountaineers, horse packers, motorcycle club, snowmobile club, 4-wheel Drive Association, logger, miner, ski resort developer, etc.).

ACTIVITY

ACTIVITY

Divide the class arbitrarily into groups to role-play the various interest groups. See "Involvement in Environmental Issues" process in the introductory packet for specific directions and task cards to use in a simulation game. Each interest group should examine the information and maps in the Forest Service pamphlet, and decide to back either alternative A, B, or C (or perhaps a modification of one of these, or a combination of aspects from two or all of the alternatives).

The situation in this case could be a public hearing before the Forest Service Alpine Lakes Study Team. This group could choose one of the alternatives, based on the quality and persuasiveness of the various interest group recommendations.

ALTERNATIVE ACTIVITY

After Steps 1 - 5 above (PRE-ACTIVITY) the students could simply study the background information and the three land use alternatives individually or in small groups. Have each student answer the response questions in the back of the pamphlet. These could be duplicated for each student or put on the board). Students suggesting modifications or combinations of the A, B, C alternatives should explain these to the class. Tabulate the students' individual preferences on the board and discuss reasons for these preferences.

POST ACTIVITY

Follow up the class results by keeping up with developments on the real issue. If no news appears in the media within a reasonable time, try calling the Snoqualmie National Forest Headquarters in Seattle, and ask them about the status of the Alpine Lakes Land Use Study. The Forest Service might be able to supply a resource person, perhaps with A. V. materials.

The Alpine Lakes Protection Society (A. L. P. S.) would probably be happy to send a resource person to the class. They do have a tape-slide presentation on the Alpine Lakes.

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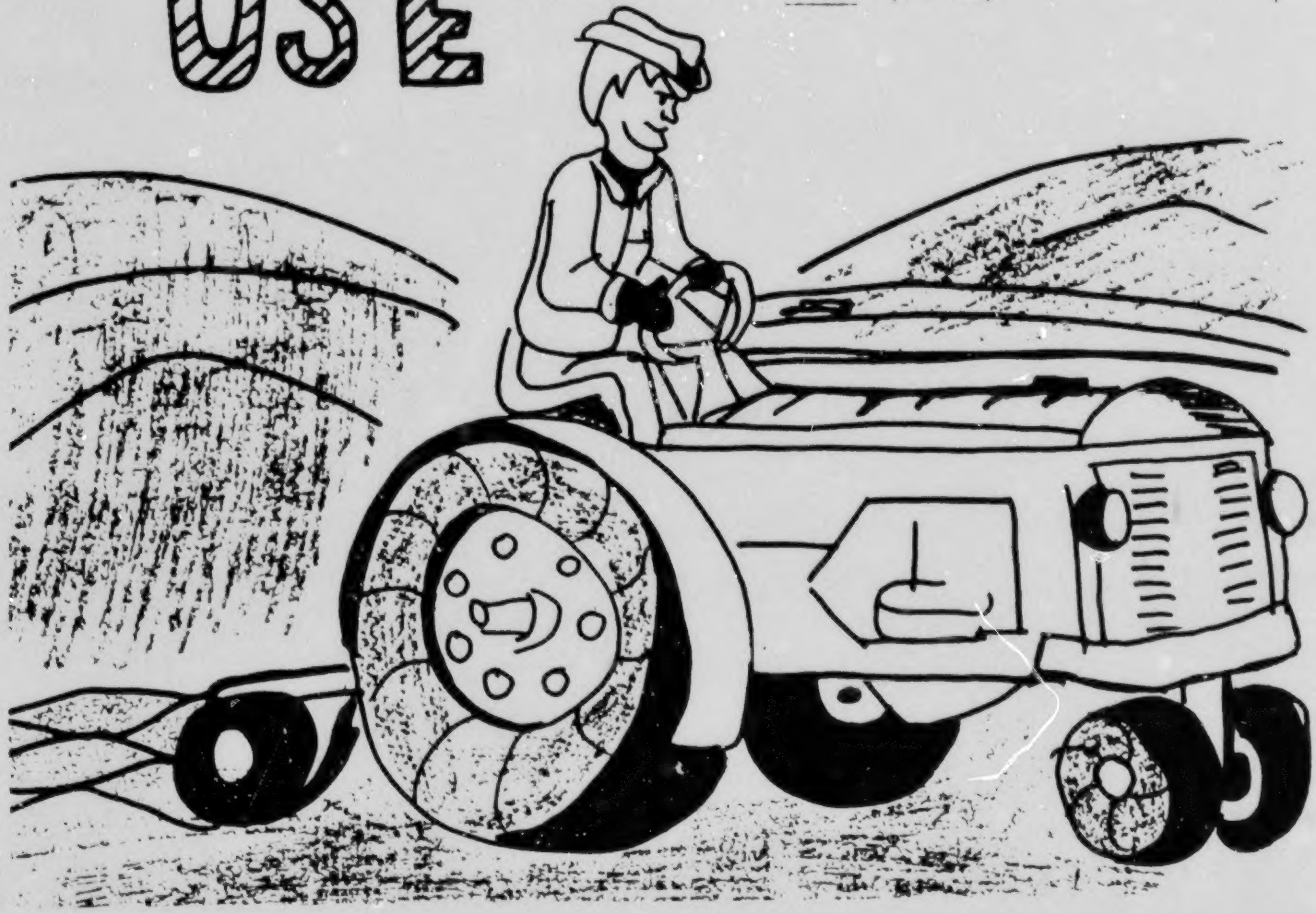
LAND USE

SUBJECTS L-6

Biology
Social Studies

LEVEL (7 - 12)



MICROCLIMATES

LAND USE FIELD STUDY

Natural vegetation and man-made structures (buildings, roads, etc.) have very different heat reflecting and absorbing properties. These differences may cause considerable variation in local climates (and degree of comfort) under identical general weather conditions.

LEVEL VI OBJECTIVE

The student will know how man made structures can alter the temperature of a local area.

OBJECTIVES

This exercise could be an extension of the microclimate lab in Chapter 3 of the B.S.C.S. Green Version Biology course. Microclimate data is usually obtained by taking temperatures and humidity readings at various heights above ground, at nearly the same time, in different places (microhabitats) in the same general area. For examples of such studies, see references listed below.

MATERIALS

Thermometers
Wet bulb thermometer for humidity readings
Meter stick or yardstick

RESOURCES

Rillo, T.J., "Exploring Small Climates", Science Activities, Dec. 1970, p.18

Science in City and Suburb, 1969, American Educational Publications, Middletown, Conn.

B.S.C.S. Biology, Green Version; Ex. 3.3 in 1st ed. Lab Manual

Sellati, K.N., "Science Club Studies A Shopping Center", American Biology Teacher 34, p.131. (mar. 1972).

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PRE - ACTIVITY

Define microclimate and microhabitat - give a few examples - have students list others that can be found in the vicinity of the school (e. g., the asphalt parking lot, concrete walkways, dirt track, grass, bushes, woods, etc.). Choose an area for study, assign teams of 3 or 4 students to take measurements at the various microhabitat stations. Set up a recording chart to combine data from all teams. For example:

Station		#1	#2	#3
Temp.	1st height			
	2nd height			
Humidity	1st height			
	2nd height			

Decide on exact methods and conditions so that all teams will have comparable data. A master map pinpointing the various stations would be helpful in organizing.

ACTIVITY

Go to site and take temperature and humidity readings, all at nearly the same time. Different sets of microclimate data could be obtained under different weather conditions for comparison. The local school environment should provide a variety of microhabitats. A nearby shopping center might also provide an interesting area to study (e. g., asphalt covered parking lot vs. surrounding vegetated areas.

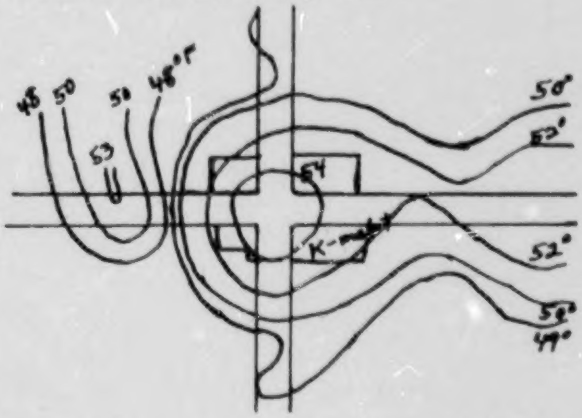
POST ACTIVITY

Calculate humidities, combine data, and analyze.

Temperature points could be plotted on a map and connected by a series of isothermal lines to show "hot spots" on a kind of temperature contour map.

ASPHALT MALL SHOPPING CENTER
TEMPERATURES (°F)

11:00 A. M. March 10, 1984



See if you can come to some general conclusions, supported by your data, about the effects of man-made environments or climate in urban or suburban areas. How might the climate of a farmer's field, a forest, and a city street vary under the same weather conditions? How might the climate vary in nearby parts of the city at the same time?

POST ACTIVITY EXTENSIONS

1. Make an estimate of the percentage of your local area covered by asphalt, concrete roofs of buildings, etc., compared with the percentage covered by vegetation.

POST ACTIVITY EXTENSIONS (continued)

2. Examine and interpret infrared aerial or satellite photos of urban areas, forest and agricultural land, water, glaciers, etc.

   Ordering information for such photographs can be obtained from:

   Washington State Department of Natural
   Resources
   Technical Services Division
   Olympia, Wash. 98504

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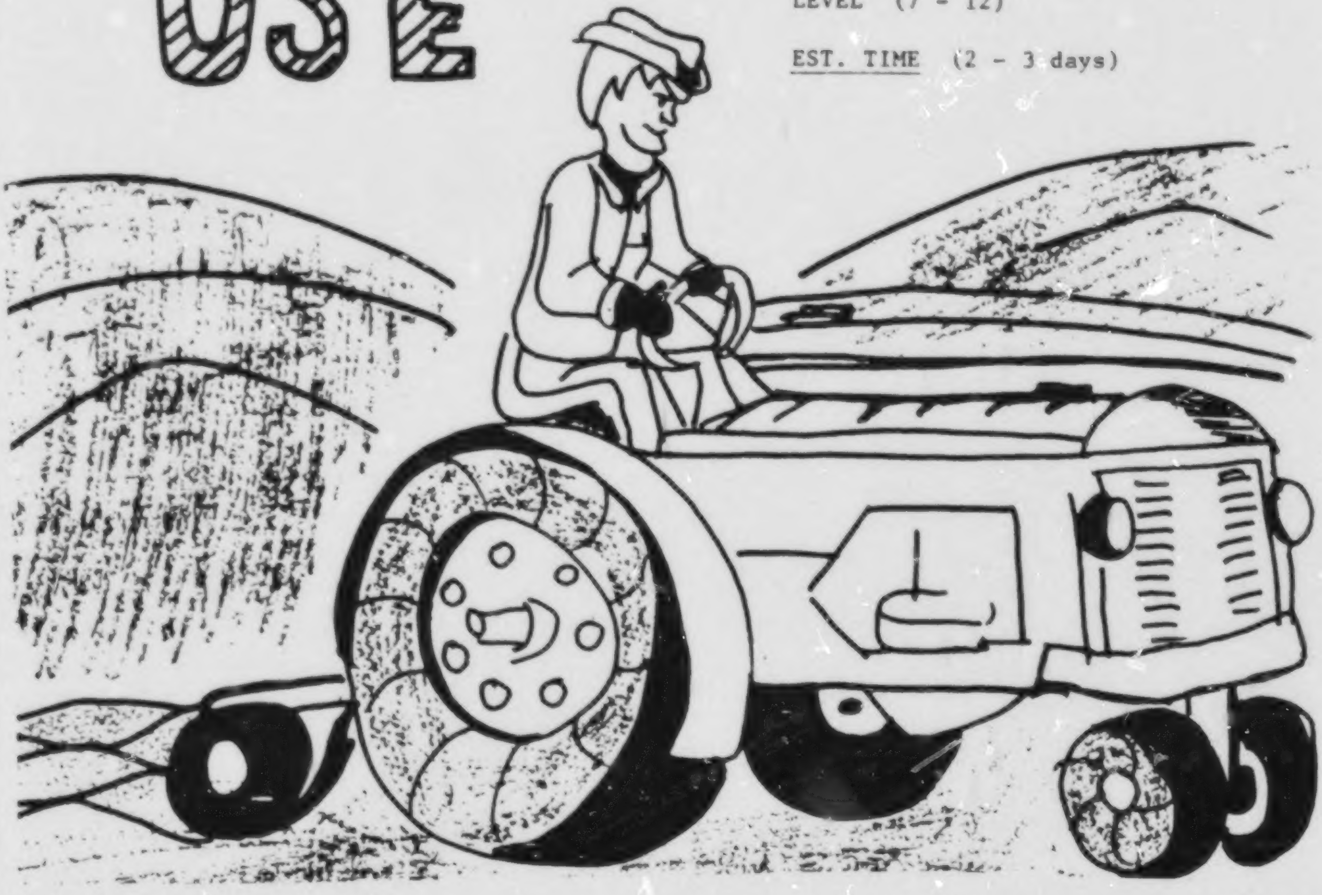
LAND USE

SUBJECTS L-7

Math
Science
Social Studies

LEVEL (7 - 12)

EST. TIME (2 - 3 days)



PARKING FACILITIES

LAND USE ON-SITE INVENTORY

Parking is a major problem in the urban environment.

LEVEL VI OBJECTIVE

The student will recognize parking space as a significant urban land use category.

OBJECTIVES

This activity is designed for large cities, small towns, or suburban business districts. Some pre-training is necessary for part of the activities: pacing, computing areas, determining percentages, ratios, and measuring.

TEACHER BACKGROUND

PRE - ACTIVITY

Discuss with students the characteristics of the city center:

- A. Business
- B. Concentrations of people
- C. Transportation
- D. Parking facilities (emphasize this part as it is the focus of this activity)
- E. City hall
- F. City services

After your discussion, have students decide which block in the city center they think they would like to study. Record it on a city map (city maps are usually available at local gas stations) or draw a map of your own.

Proceed to the city center business district, or whatever business district is appropriate for this study. (Hopefully it will be within walking distance from your school.)

ACTIVITY

With students, take a walk in the city center area. After the walk, have the students decide which block they actually would like to study. It might be different from the one they chose in class. (Help students to choose a block that has street and commercial parking facilities.)

1. Have students make an inventory of the block they have chosen to study. (See student activity (Task Card 1 , #1.) These could be things such as grocery stores, parking lots, alleys, etc.

2. Have students estimate the numner of cars that could legally park on the streets and in commercial or private parking lots. (See Student Activity (Task Card 1 #2.)

3. Have students make an actual count of the spaces available in this block for parking. If commercial lots are evident, have a small group of students interview attendant for needed information. (See Student Activity (Task Card 1 , # 3.)

   Have students compare their estimates with the actual number of spaces.

4. Have students estimate the square feet of the block. (See Student Activity (Task Card 1), #4.)

TASK CARD 1

TASK 1.

1. Inventory your block. Write down everything you notice on the block. What is here? (Use the back of this sheet if needed.)

__________ __________ __________ __________
__________ __________ __________ __________
__________ __________ __________ __________
__________ __________ __________ __________
__________ __________ __________ __________
__________ __________ __________ __________
__________ __________ __________ __________
__________ __________ __________ __________
__________ __________ __________ __________

2. Estimate the number of cars that legally could park on the streets surrounding the block and in parking lots:__________

3. Make an actual count of the spaces available. This should include street and parking lot spaces. How many are there?__________

   How close is this number to your estimates?__________

*4 What is the area of the block? Estimate its area in square feet:__________

5. Determine the length (__________ ft.) and width (__________ft.) of your block.

   Area = [length (__________ft.) X width (__________ft.)] = __________ square feet.

6. Determine the area of one parking space:__________sq. ft.

*7. What is the total square feet of all the parking spaces in the block?______sq.ft.

*8. Parking space is what percent of the total area of the block?__________%

ACTIVITY

TASK CARD 2

TASK 2 - Street Parking - Page 1 of 2

1. If your block has parking meters, how many are on the street in the block you studied? ___________.

   What was the cost per hour? ___________.

   How much money would the city make in the block you studied in one hour? _____.

2. Determine how much time is allowed for street parking: the shortest duration of time: ___________; the longest duration: ___________.

3. Are there any types of parking zones other than those for automobiles? What are they? ____

4. How many parking violations (tickets) did you see on cars? ___________

   How many cars did you see that were parked overtime or in other illegal ways? ___________ Name some of the violations you feel were illegal: _______________

   ____

   ____

5. On a separate sheet of paper, write a response for a policeman or meter maid after he (or she) has given a ticket on a parked car. The irate owner returns before he (or she) can leave. What would the owner say? Act out your stories with a classmate.

6. Is there any commercial parking available on the block you studied? ___________

   If so, how much? ___________

   How much does it cost to park there by the hour? ___________ By the day? ________

   By the week? ___________

   What kind of taxes do the commercial parking businesses pay? ___________________

   Can people park their own cars or does the attendant do this? _________________

ACTIVITY

TASK CARD 2 - CONTINUED

TASK 2 - Street Parking - Page 2 of 2

7. Does the parking in the area you studied meet the needs of the people coming to the city?__________ Explain:______________________________

____

____

____

8. What do you call the types of parking you saw being used in this block?

____

9. How do people know where to park and where not to park? List all the things' that tell us:____

____

____

ACTIVITY

POST ACTIVITY

1. Have students complete starred activities in the classroom. Assist those needing help.

2. Have students make a map of the block they gathered data on. See if they remember where each store was. Let them work in small groups to share information.

3. Have students make a comparison of the city block they studied and a residential block close to the school. They can inventory a residential block and then discuss the different needs of each, the similarities and differences; e.g., how are cars parked in the residential area compared to the city? What is different about the buildings? What needs of people are the same?

4. Ask a policeman or meter maid to visit your classroom. Discuss parking with him or her.

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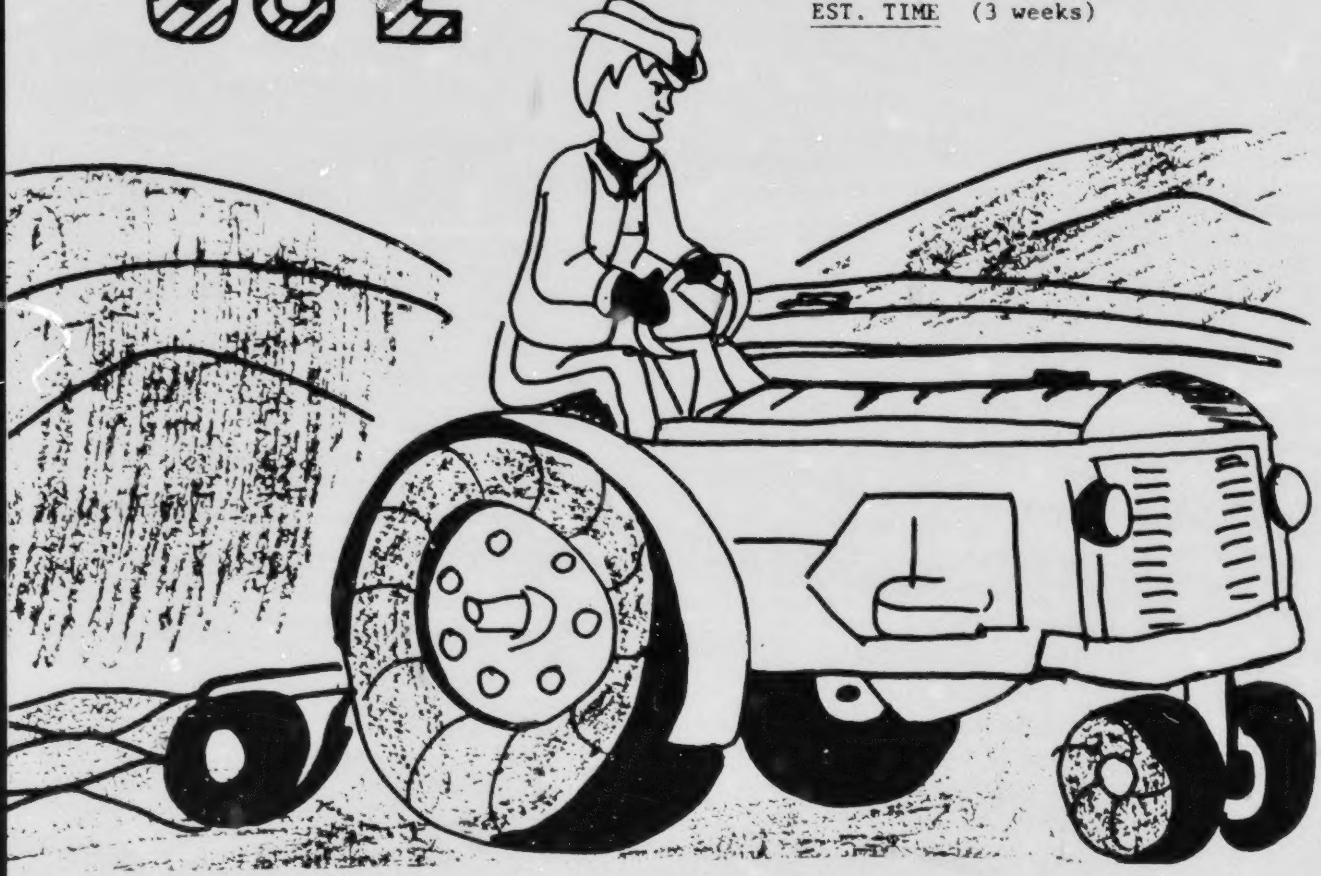
LAND USE

SUBJECTS L-8

Social Studies
Science

LEVEL (7 - 12)

EST. TIME (3 weeks)



PLOTTING A SMALL AREA OF LAND

LAND USE

DIVERSITY

To observe environmental changes of an area, a record of existing conditions is needed. Census taking (enumeration) is one tool in ecological studies.

LEVEL VI OBJECTIVE

The student will know that a given area of ground contains a great diversity of living things.

OBJECTIVES

This unit is designed to be used over the entire school year but could be used effectively for three weeks in the spring. It is hoped that at least once a month the students will be given a chance to observe the changes in their plots and record their findings.

Look over the school grounds to find as many likely spots for this work as possible. Select areas where there is little foot traffic so that the golf tees are unlikely to be noticed and disturbed. Try to select several sites which are somewhat different so that the students will discover the variety of small environments which exist within the large environment. It is not wise to select plots in a well-cared-for lawn since there is little or no variety of plants. One dozen plants per plot would be ideal. Provide for diversity between plots by selecting an area that is usually sunny, one that is shady during part of the day, and one that is almost always shady.

Each student will need a piece of white tagboard 12" x 18". The students will be able to use the sheet for mapping the small plot and for keeping their lab sheet.

Explain to the students in general terms that they will study intensively a small plot of land of the school ground for the entire year.

MATERIALS

Magnifying lens for each student.

3 green and 1 brown golf tees or colored popsicle sticks for each two students.

Guide books for the identification of plants and animals.

TEACHER BACKGROUND

PRE - ACTIVITY

1. Pass out the student worksheets. Have the students respond to the questions on pages 2 and 3 and then discuss their answers. Keep in mind that there are no "correct" answers. Do not discourage any legitimate response; in fact, don't try too hard to encourage any answers. Use these questions to generate enthusiasm and attempt to arrive at the conclusion that to answer them adequately they (the students) must carefully observe their plots for several weeks.

2. Divide the class into groups of two. Allow time for the students to read and comprehend the instructions on pages 3-6 of their worksheets. Students must have some common background when they begin their observations. Discuss with the students the qualifications they will look for when selecting a plot. They must understand the illustrations on their worksheets so they are certain how to draw their maps.

ACTIVITY

1. Each pair of students selects a plot and marks it with the golf tees or colored popsicle sticks. They draw their maps, first locating the nonliving parts of the environment. Caution them not to remove anything from their plots. They must not touch or disturb anything; they are only to observe and record their findings. Stress the point that sticks, rocks, etc., will help locate the positions of the plants. The students place symbols for the plants on their maps, and fill in the first and second columns of the KEY TO PLANTS ON THE PLOT OF GROUND, page 6 of the worksheets.

2. The identification phase of this unit can be as involved or as simple as you choose. In general, your decision will rest on the availability of identification material, the ability of your class, and to a much greater extent, the value of importance you place on identification. Some students enjoy making careful identification and learning names, while close scrutiny of, for example, the floral parts of a dandelion, may be a waste of time and energy. If your time allows, identify with the students that show a flair for taxonomic procedures and use it as an enrichment enterprise. The important point here is that the students gain an understanding of the great diversity of plants - their names aren't really too important.

STUDENT STUDY SHEETS

NAME ____________________

STUDYING A SMALL PLOT OF LAND

You cannot study all the things on earth. But by studying a small plot of land, you can find answers to questions like these:

1. WHAT ARE THE LIVING THINGS YOU MIGHT EXPECT TO FIND ON A PLOT OF GROUND?

2. ARE THE LIVING THINGS ON THE PLOT ALWAYS THE SAME? OR DO THEY CHANGE?

3. HOW LONG DOES THE PLOT OF GROUND REMAIN THE SAME?

NAME ______________________

4. WHAT CHANGES DO YOU EXPECT TO HAPPEN TO THE PLOT OF GROUND?

5. WHAT ARE SOME EFFECTS OF TEMPERATURE AND RAINFALL OF THE PLOT?

6. ARE TWO PLOTS OF GROUND LIKELY TO BE THE SAME IN ALL WAYS? ____________

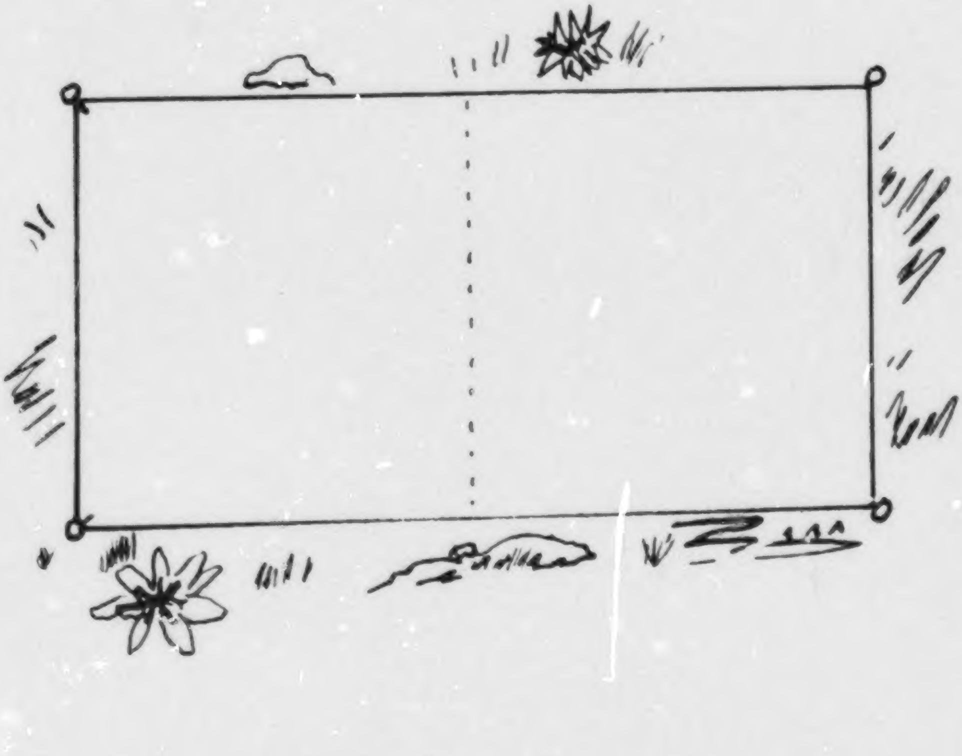
HOW MIGHT THEY DIFFER? ______________________________

NAME ______________________________

MAPPING A SMALL PLOT OF LAND

The plot of land you will study will be 12 inches wide and 18 inches long. Your teacher will give you a special piece of paper 12 inches by 18 inches on which you will make a map of your plot. Fold the paper in the center and draw the map on the inside. The folded map will also serve as a folder to keep the worksheets your teacher will give you. You should put your name on the outside of your folder.

1. With the help of your teacher, choose a place outdoors which interests you. Pick a plot that has some plants but is not completely covered with them.
2. Hold your special map paper over the plot of ground. Push a golf tee or popsicle stick into the ground at each corner of the paper. Remove the paper. The golf tees mark the corners of the area you will be studying. Leave the golf tees in the ground until the unit is finished.



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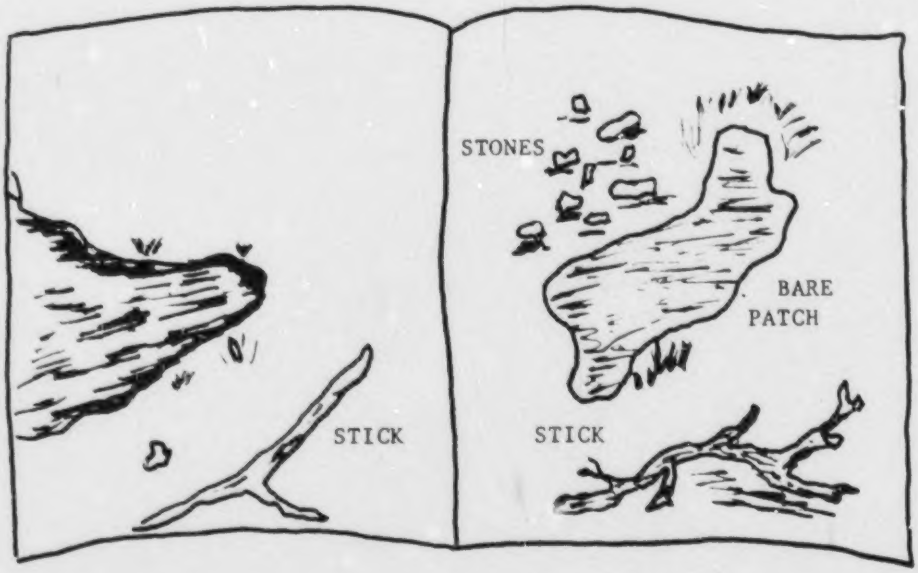
NAME ____________________

3. Put a brown spot on the map in the corner next to the brown golf tee. This will help you place the map in the same position each time you work on it.

4. On the map, draw symbols to show the non-living things such as stones, sticks, and bare patches. Make the symbols the same size and shapes as the non-living things. The non-living things are part of the environment of the living things on your plot. They are also landmarks for locating a spot on the map.



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NAME____

DANDELION
PLANT

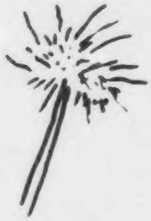
GRASS
PLANT

PLANTAIN
PLANT

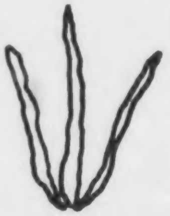
5. Examine the plants on your plot. How many different kinds do you find?

____

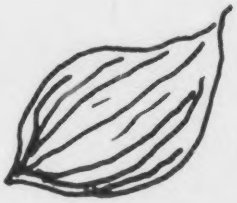
6. Find the names of as many of the plants as you can. Decide on a symbol to use for each kind of plant. You might use symbols like these:



DANDELION



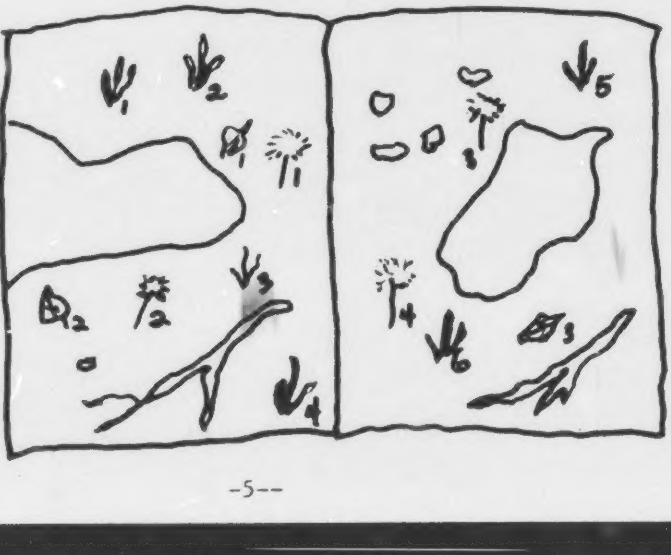
GRASS



PLANTAIN

7. Draw the symbols and write what each symbol means on page 6 of your worksheets.

8. Locate each plant on your map by drawing its symbol. If there is more than one plant of the same kind, number each one after the symbol.



NAME BEST COPY AVAILABLE

KEY TO PLANTS ON THE PLOT OF GROUND

SYMBOL	NAME OF PLANT	TOTAL NUMBER OF EACH KIND OF PLANT

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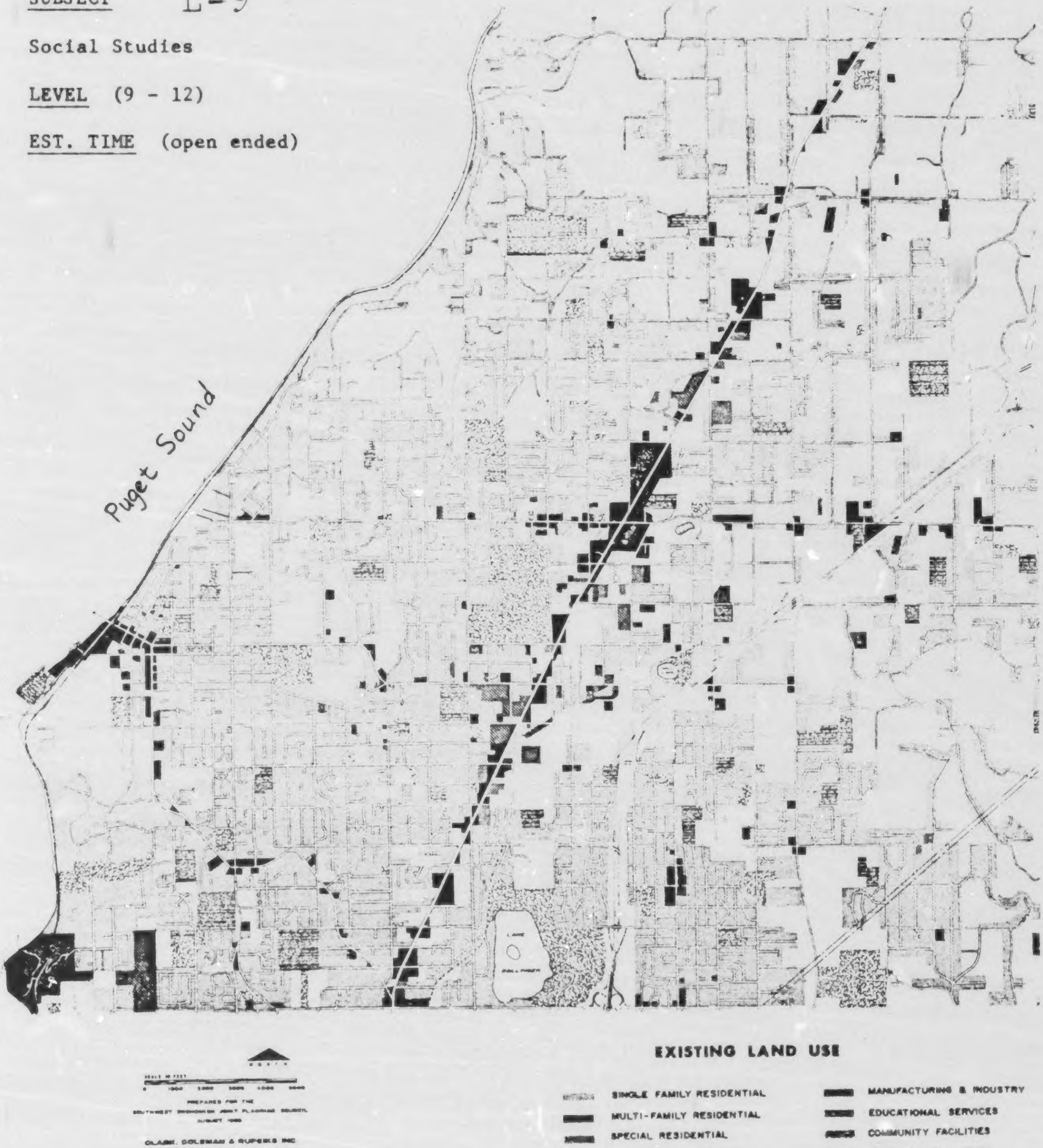
COMPREHENSIVE LAND USE PLANNING

SUBJECT L-9

Social Studies

LEVEL (9 - 12)

EST. TIME (open ended)



In order to direct future development and retain a liveable environment, long-range urban and regional planning is vital.

In this activity, the students will:

1. Develop goal statements for long range planning of their local community.
2. Develop a planning process, and develop their own suggestions for a comprehensive land use plan.
3. Compare their plans with those developed by city and regional officials.

LEVEL VI OBJECTIVE

The student will be able to develop a comprehensive land use plan.

OBJECTIVES

REFERENCES AND RESOURCES

Edmonds City Planning Department (Edmonds Civic Center)

Large (2-1/2 x 3') city maps are available:
- Street map
- Official zoning map
- Comprehensive Plan Map (The Edmonds Comprehensive Plan dates from 1963 and probably needs considerable revision.)
- Topographical map (Reproductions may be difficult to read.)
- Official Zoning Ordinance - especially interesting are the "intents" of various established zones.

Infrared aerial photographs of Edmonds may soon be available.

Either the City Planner or his assistant might be willing to speak to the class on local land use problems; or they probably would be delighted to show a small group of students around the planning department.

Lynnwood City Planning Department (Lynnwood Civic Center)

Large (2-1/2 x 3') city maps are available:
- Street Map
- Official zoning map - An understandable condensation and explanation of the Official Zoning Codes may soon be available.

The 3-member planning staff is another potential source of speakers.

Snohomish County Planning Department in Everett is another source of information, and a worthwhile field trip destination.

Puget Sound Governmental Conference - P.S.G.C.
Grand Central on the Park Building, 1st and South Main, Seattle.

The library is a fantastic source of statistics and detailed reports on all aspects of regional planning. Teachers or students are welcome to use the materials in the library. They have a Xerox machine and a helpful librarian.

Interim Regional Development Plan (containing a Regional Land Use Plan Map, and considerable information on trends, problems, goals, and policies) is apparently available from P.S.G.C. in quantity. Large land use maps (4' x 6') can be duplicated for $2.00 each.

Everett Community Plan by Lawrence Halprin and Associates. The "Halprin Plan" may become a model for land use planning for the entire state.

Edmonds School District 15 (Educational Services Center) The School District Map is available in quantity, and might be satisfactory for the student tasks outlined here. Some reference materials collected by the writing team from various planning agencies are available through the Environmental Education Consultant.

PRE - ACTIVITY

Class Discussion:

Why is planning necessary?

Should planning be entirely at the local level, or should there be regional, state, and federal involvement in the land use planning process?

Should planning be short term or long term?

How far ahead can we practically plan?

How may land use planning affect you as an individual, or your family?

ACTIVITY

Divide the class into teams of 3-5 students. Each team is to develop a Comprehensive Plan for the future of the local community (e. g. Edmonds or Lynnwood). Start with a map of the community, showing only the present streets, waterways, railroads, etc.

Tasks for each Planning Team:

Task #1

Discuss and write up general Goal Statements for your community. What kind of community do you want this to become? Define goals for population growth (or non-growth), recreation, transportation, open space, commercial, and industrial development - or whatever you consider important for the future.

Task #2

Draw up a List of Land Use Classifications that would be appropriate for your community. If you decide to use a zoning system, these would be your different zones. Write out the intent of each zone (i. e., the principal objective for establishing the classification, or the function of the zone), and list the various uses that would be permitted within the zone.

Task #3

Develop Criteria for Planning. What factors should be considered in determining suitable land uses? What kinds of information would you like to have about the land and the community in order to plan appropriate land uses for specific areas?

Task #4

Based on your knowledge of the community, data gathered from other sources, and on-site inspection when necessary, decide which areas of the community would best fit your various land use classifications, and mark these areas on your city map.

POST ACTIVITIES

Have each team present a summary of its Comprehensive Plan to the entire class.

Post and compare the different planning maps.

Each team should estimate how many people its plan would accommodate at saturation population. Which plan would allow the greatest influx of new population, additional residential building, etc.?

Which plan would provide the greatest area of open space and park and recreational facilities?

Have the class examine an Official Comprehensive Plan Map and a current Zoning Map. How do these official maps compare with the students' plans? How does the current zoning pattern compare with the long range plan?

Perhaps the class could recommend specific changes in the Comprehensive Plan to the city planning department.

Examine the Interim Regional Development Plan of the Puget Sound Governmental Conference. How do the official city plan and the students' plans fit into regional goals and policies? In what ways is the local community tied to other governmental and management units in the surrounding region? Does a reasonable balance exist among city, county, and regional planning and control?

EXTENSIONS

Determine the current status of a State Land Use Planning bill, and the possibilities for a Federal Land Use Planning Act, such as the one introduced by Senator Henry Jackson of Washington. What are the proper roles of the various levels of government in land use planning, and what planning processes could be used?

FIELD TRIPS

These could be formal, entire-class trips, or informal visits by small student groups who could then report back to the class.

Suggestions:

Visit the various planning departments listed under References and Resources.

Visit areas of land use controversy in the community. On-site inspection may be helpful to students in classifying areas. (Task #4)

SPEAKERS

Invite speakers from various community interest groups to address the class on such questions as:

What are your organization's goals for the future development of this community?

Comment on the present local and regional land use and zoning plans. Do these comprehensive plans fit the goals of your organization? What specific changes would you like to see in these plans for future development?

Some organizations to consider:

Chambers of Commerce
- Edmonds
- Lynnwood
- Everett
- South Snohomish County

Snohomish County
    Economic Development Council
    Agricultural Extension Agency (Branch of the state agency)
    Comprehensive Health Planning Council
    Environmental Council (Branch of the state council)
    Metro (Concerned with transportation)

Port of Everett

Citizens Advisory Committee to the Port of Everett (the Jetty Set)

Burlington Northern Railroad

Real Estate Companies

Contractors and builders unions

League of Women Voters
    Snohomish Chapter
    Puget Sound Chapter

ACTIVITY

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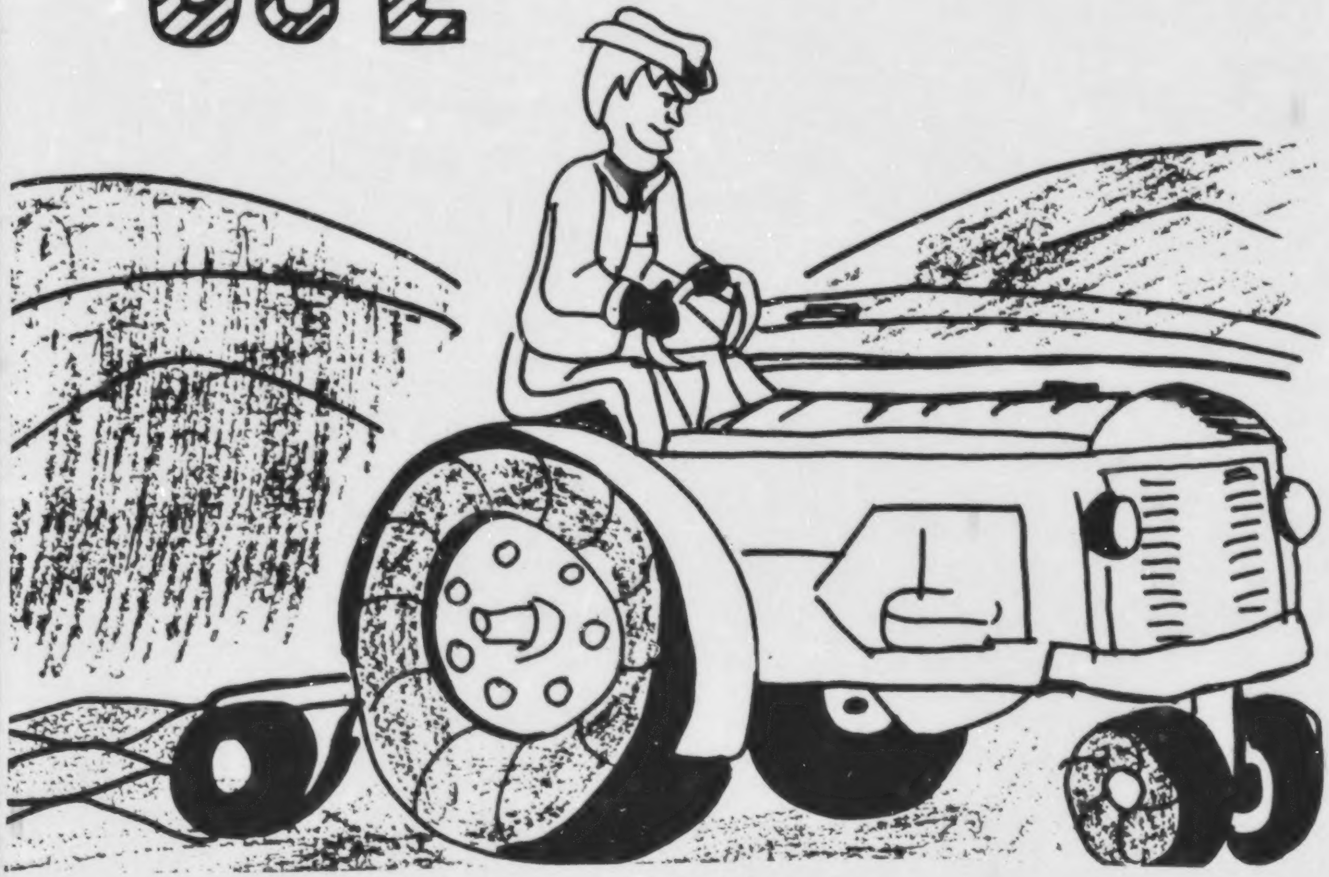
LAND USE

SUBJECTS L-10

Science
Horticulture

LEVEL (7 - 12)



QUALITY OF SOIL

LAND USE

LAB INVESTIGATION

The biological productivity of the soil is closely related to the organic content of that soil and to other physical properties of that soil. These properties should be taken into account when considering how land is used or should be used!

LEVEL VI OBJECTIVE

The student will know at least four physical properties which soil must have for effective production of food.

OBJECTIVES

This is a regular lab. A number of questions may help the student better to recognize the great importance of conserving available soil that would support food crops (instead of covering it with buildings, freeways, etc.)

Also instruct students about soil horizons before beginning this lab.

A relevant problem to consider after students have finished lab is to consider the farming area of the Snohomish Valley. How will it be protected for farm use? Will land developers exploit it for housing developments, or will important roads run through the area?

MATERIALS

Standard Soil Conservation Service auger;
Stove with oven;
Scale;
Frozen fruit juice can;
Large beaker;
Heavy plastic bags of at least 1 qt. size;
Soil kits for testing for various elements
  Nitrogen,
  Phosphorus,
  Potassium (Potash),
  Calcium,
  Magnesium,
  Sulphur;
Set of 5 sieves.

RESOURCES

James E. Murphy
Science Education Center
University of Iowa
Iowa City, Iowa

Soil testing kits are available from:

LaMotte Chemical Products Co.
Chestertown, Maryland 21620

Sudbury Laboratory, Inc.
Sudbury, Massachusetts 01776

TEACHER BACKGROUND

PRE - ACTIVITY

At this time the teacher should assign groups to various locations for taking soil samples. Students in a group will also be diagramming the soil horizon. Tests should be conducted on the sample of each horizon from each collecting point.

Discussion questions:

How do people of different aspects of life view soil?

What percentage of the earth's surface is dry land?

What part of earth's land area has a climate, topography, and soil suitable for agriculture? (Not so much as one might expect!)

What percentage of the world's food supply comes directly or indirectly from the soil?

What are some sources of food other than those related to soil management?

ACTIVITY

I. Assign groups to take soil samples from varying locations around city or school.

  A. Take samples at vertical and lateral straight lines that intersect at right angles to each other.

  B. Make a map of collecting area (the whole area for all student groups.

  C. Fill a quart-size plastic bag with the sample. Samples should be taken from all the soil horizons if possible. If water table is reached during the taking of a sample, depth of water table should be recorded. Use masking tape as a label to record:
      Location,
      Depth of sample,
      Group number.

  D. Before conducting any tests on soil, it must be dried at 110°F. for about 24 hours.

II. Tests: record findings on chart attached.

  A. Organic content of soil (by incineration.)

    1. Place 100 grams of dry soil in a furnace or stove set at 600°C. for 2 hours. (During the 2 hours the organic matter is oxidized to carbon dioxide and water vapor.)

    2. When cool, weigh. The change in in weight will indicate the quantity of organic matter.

    % of organic material in soil=

$$\frac{\text{Lost weight}}{\text{Pre-burn weight}} \times \frac{100}{1} =$$

  B. Water holding capacity

    1. Cut both ends out of a small can; a soup can or large frozen juice can will do nicely. Cover one end with a filter paper and secure with a rubber band.

    2. Moisten filter paper.

    3. Add 50 grams dry soil to can and weigh entire unit.

    4. Place unit in large beaker and add water to beaker until water level is 1/2 that of soil.

    5. Allow can of soil to stand in water overnight.

    6. Remove can of soil , let it drain for 30 minutes, and weigh it:____

    7. Soil's moisture holding capacity =

$$\frac{\text{Gain in weight due to water}}{\text{dry weight}} \times \frac{100}{1}$$

    (Gain in weight = weight of can and wet soil minus weight of can and dry soil.)

    8. Repeat this water holding test on

ACTIVITY

a sample of the same soil that has been incinerated.

C. Determination of particle size.

1. Use set of 5 sieves sized:
   1 mm mesh
   0.5 mm mesh
   0.25 mm (60 mesh)
   0.105 mm (140 mesh)
   0.05 mm (300 mesh)

2. Use 100 grams of dry soil.

3. Weigh amount retained in each seive and compute % of total composition each particle size makes up.

4. Optional determination of particle size:
   a. Graduated cylinder, the larger, the better
   b. Fill cylinder 1/4 full of soil
   c. Add water measured 1/2 the volume of cylinder and mix
   d. Allow cylinder to stand 20 min.
   e. Record % of air space in soil (indicated by decrease in vol.)
   f. Estimate size of particles, starting with largest on bottom:
      silt
      clay
      sand
      gravel

D. Finding the pH of soil.

1. Add some distilled water to 10 grams soil and grind mixture to prepare a slurry.

2. Let several drops of slurry run down a strip of pH paper and match color change to color chart on pH paper holder.

E. Testing the soil for the presence of several elements (nitrogen, phosphorus, potassium [potash], calcium, magnesium, sulphur.)

1. Use a regular soil testing kit for this test.

QUESTIONS FOR DISCUSSION (Use charts to hopefully find basis for answers)

1. What is the distribution of organic matter in the various horizons of soil, and why does this distribution exist?

2. What physical aspects of the soil are affected by the organic content, and why?

3. Why is the biological prodictivity of the soil closely related to its organic content?

4. Describe the characteristic distribution of various particle sizes in each horizon and explain what brings this about.

5. How are the physical characteristics of the soil affected by the particle size and why is this so?

6. What effect does particle size have on the soils' biological activity?

7. Describe and account for the characteristic moisture-holding capacity found in various soil horizons.

8. What is the effect of organic matter and particle size on water-holding capacity?

9. Does there seem to be any relationship between a soil horizon and a characteristic pH or chemical composition? If such a condition exists, why?

SUGGESTION

Grow radishes in a sample of each soil collected. Note the quality of radish or of radish plant produced by each soil type. Relate quality of plant to qualities of soil that were tested in this experiment.

SOIL SAMPLE DATA SHEET

Sample # ____________

Location ____________

Date ____________

Collector ____________

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		Horizon A	Horizon B	Horizon C	Bed Rock
Color					
% Organic Content					
Depth of Horizon					
Moisture Holding Capacity With Organic Matter					
Moisture Holding Capacity Without Organic Matter (Incinerated)					
Particle Size Dist.	1.0mm				
	0.5mm				
	0.25mm				
	0.105mm				
	0.05mm				
Chemical Analysis	pH				
	Nitrogen				
	Phosphorus				
	Potassium				
	Calcium				
	Magnesium				
	Sulphur				

ACTIVITY

LAND USE

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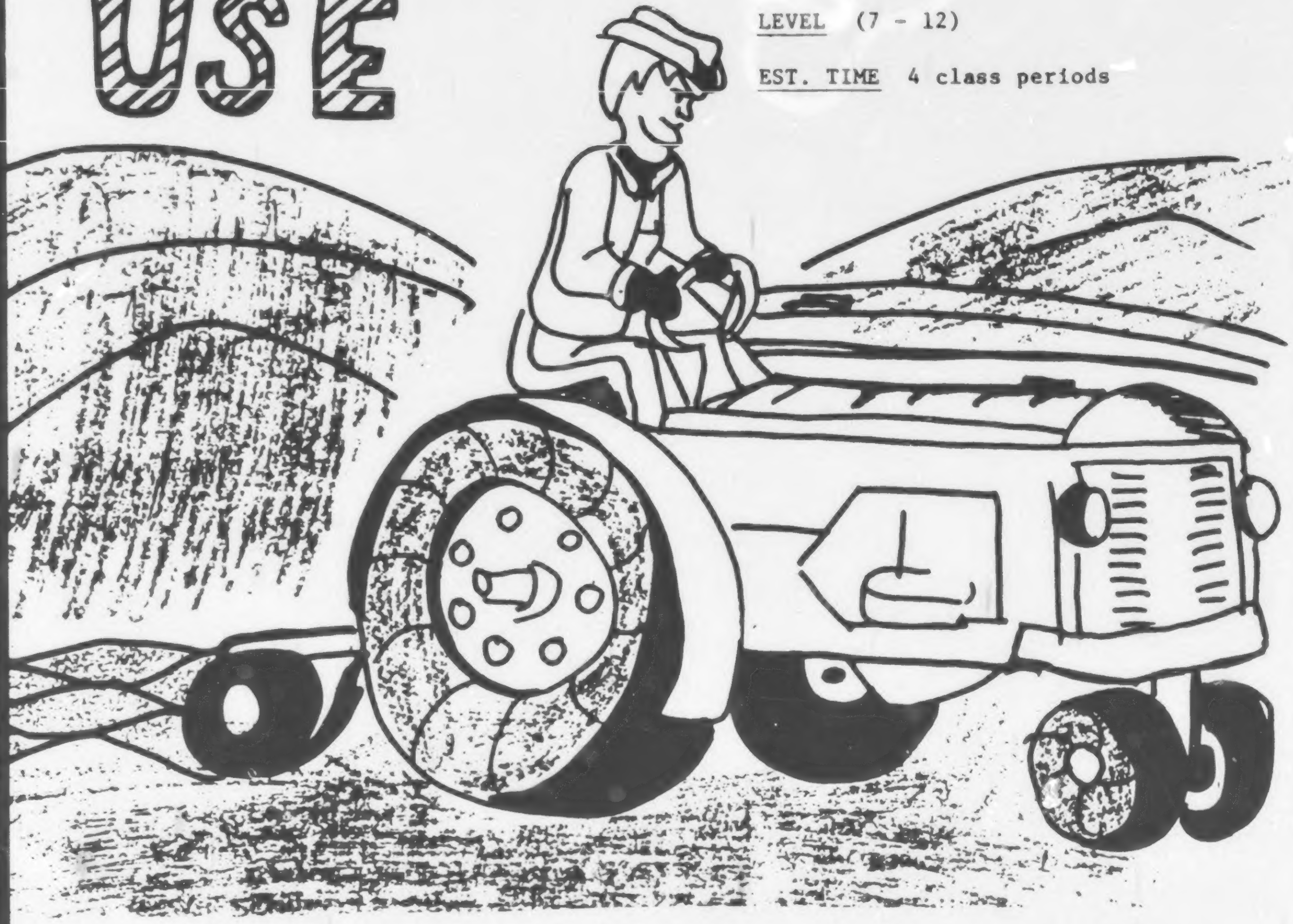
L-11 SUBJECTS

Social Studies
Language Arts

LEVEL (7 - 12)

EST. TIME 4 class periods



LAND RESERVES

INVESTIGATION - RESEARCH

National and state areas set aside for present and future use or visitation are important to our citizens and national welfare.

LEVEL VI OBJECTIVES

The student will know the basic operating policies of:

a. National Parks
b. Wilderness Areas
c. National Forests
d. State Recreational Lands
e. State Forest Reserves

The student will know how the public uses National and State land areas.

OBJECTIVES

MATERIALS

Brochures
Pamphlets
Maps
Books
and other publications released by each governing area

TEACHER INFORMATION NEEDED

*Names and sizes of National Parks
*History and development of same, and reasoning behind their development
*Attendance counts and activities for which people travel there
*Same information for wilderness areas
*Information on activities that went on in area before it was set aside as national park or wilderness area

RESOURCES

Speakers from each area. (Contact Jude Petrie, E. S. C.)

SOME SOURCES OF INFORMATION

Department of the Interior

National Park Service
4th and Pike Building
Seattle, Washington
Phone 442-5542

Outdoor Recreation Bureau
1000 2nd Avenue
Seattle, Washington
Phone 442-4706

Department of Agriculture

Forest Service
Snoqualmie National Forest
1601 2nd Avenue
Seattle, Washington
Phone 442-5400

Recreation Information
1601 2nd Avenue
Seattle, Washington
Phone 442-0170

Washington State Parks Department
Olympia, Washington

PRE - ACTIVITY

Discussion starts from questions:

1. How many of you have been camping?
2. How many have been to a National Park, Forest Camp, or Wilderness Area ?
3. What is the difference?

Divide class into groups to study:
   National Parks
   Wilderness Areas
   National Forests
   State Areas

ACTIVITY

One group will do research in area of National Parks:

Assign certain parks to individuals. Each student will find for that park:
   types of activities offered
   attendance and usage figures
   age of the park
   how well developed it is
   operating costs and fees charged
   include sketch of area

The group as a whole will research the policies and philosophy behind National Parks, and prepare a statement defending the National Park concept.

One group will research Wilderness Areas:

Assign certain wilderness areas to individuals. Each student will find for that area:
   types of activities offered
   attendance and usage figures
   age of the area
   how well developed it is
   operating costs and fees charged
   include sketch of area

The group as a whole will research the policies and philosophy behind Wilderness Areas, and prepare a statement defending the establishment and operation of Wilderness Areas.

The group studying National Forests will split into three sub-groups to study the forests of Oregon, Washington, and Idaho:

Find maps of forests, and show
   size of each forest
   how well developed it is
   special features
   recreational facilities
   points of interest
   operating costs and fees

The group as a whole will prepare a statement of worth concerning National Forests and their operation, from both the people's and the nation's point of view.

The group studying state areas will divide to study Oregon and Washington parks, points of interest, rest areas, and other facilities.

Find information on:
   number
   size
   cost of operation
   income figures
   regulations
   include maps

Prepare a statement as to their worth.

POST ACTIVITY

Bring together the facts, figures, maps, and statements of all groups, as well as statements of local adult citizens who have opinions about the different types of areas and how they are used.

As a panel, make a presentation to the class.

After each presentation, develop a group feeling about the worth of such facilities and reserves.

LAND
USE

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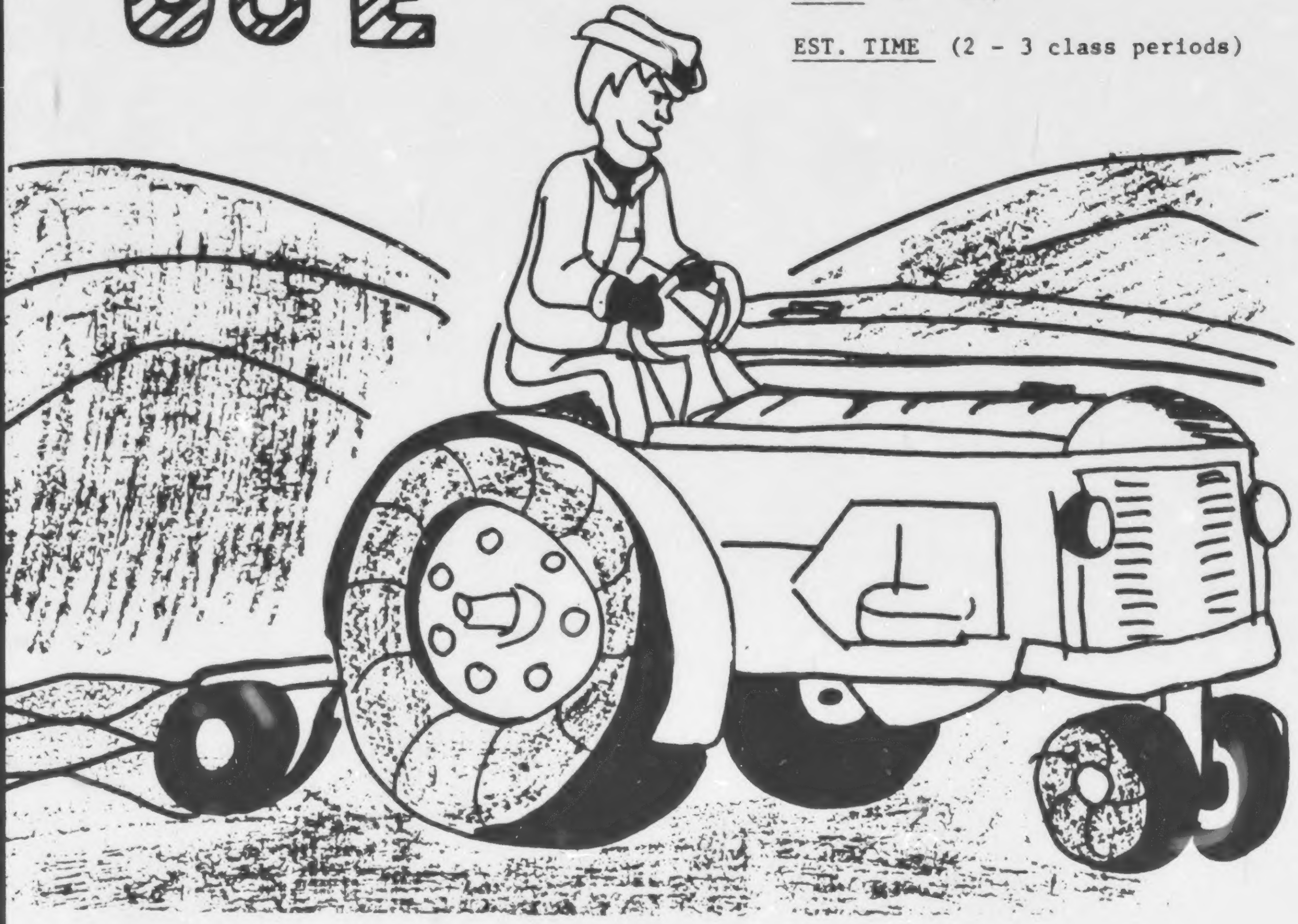
SUBJECTS L-12

English
Social Studies

LEVEL (7 - 12)

EST. TIME (2 - 3 class periods)



LAND USE

SIMULATION GAME

Economy and man determine the use of land.

LEVEL VI OBJECTIVE

The student will be able to develop two alternative solutions to an urban environmental land use problem.

OBJECTIVES

PROCEDURE

This simulation is an activity in which students play the roles of community leaders, concerned citizens, and others in the community. The activity involves the students' making decisions about problems in an urban environment, many times related to land use. Each small group plays the role of a different segment of the community. During the activity, each group may present its side of the situation in order to influence the decision-making body in its favor. All groups have a chance to be heard.

Prior to their part in this activity, the students are to identify with the roles and collect data relating to their position on the problem.

1. Explain the problem to the class.

2. Identify the interest groups that will be concerned with this problem.

3. Have the students choose the roles they want to represent. (In future role playing activities your students can be involved in different roles; for example, the environmentalists could be involved in the role of the opposition, so they can see the other side of the problem.)

4. Let students meet in their groups to organize their thinking in support of their roles concerning the problem.

5. Allow students time to research for the activity and to prepare any forms of persuasion (charts, banners, campaigns, etc.) they would like to use in their presentation.

   Your guidance, leadership, and enthusiasm will help to stimulate the students' interest in preparing the most complete packages and the most persuasive arguments. If interest is high, let the students take as much time as needed to prepare their data, which may be four or five days. If the simulation is about a real problem, let your students interview members of the community, such as city councilmen, businessmen, parents, and other citizens. If your simulation is imaginary, it is still possible to have students interview citizens of the community.

6. City council members should become familiar with the problem. They are responsible for conducting the town meetings. This involves the physical layout of the meeting such as chair arrangements, table for the council, keeping order, allowing equal speaking opportunities for all groups, etc.

ACTIVITY

Roosevelt is a city on the James River, located anywhere in the United States. Population is 75,000 and increasing, causing demands for additional downtown parking. The Business Man's Association of Roosevelt has requested the City Council to rezone a section of the downtown area for a large parking garage. The property in question is located in the city center on a four-lane main arterial of the city. Property includes a portion of a city park and a low rent apartment complex. The rezone request is for approximately one half of one city block and will park 400 cars. The interest groups involved in this proposal include:

A. Business Man's Association (BMA)
B. Save Our Parks Committee (SOP)
C. City Street Improvement Committee
D. Apartment Dwellers
E. City Planning Commission
F. City Council

Additional information about the problem:

A. The park is the only green belt in the area.
B. Present parking space in this area is inadequate.

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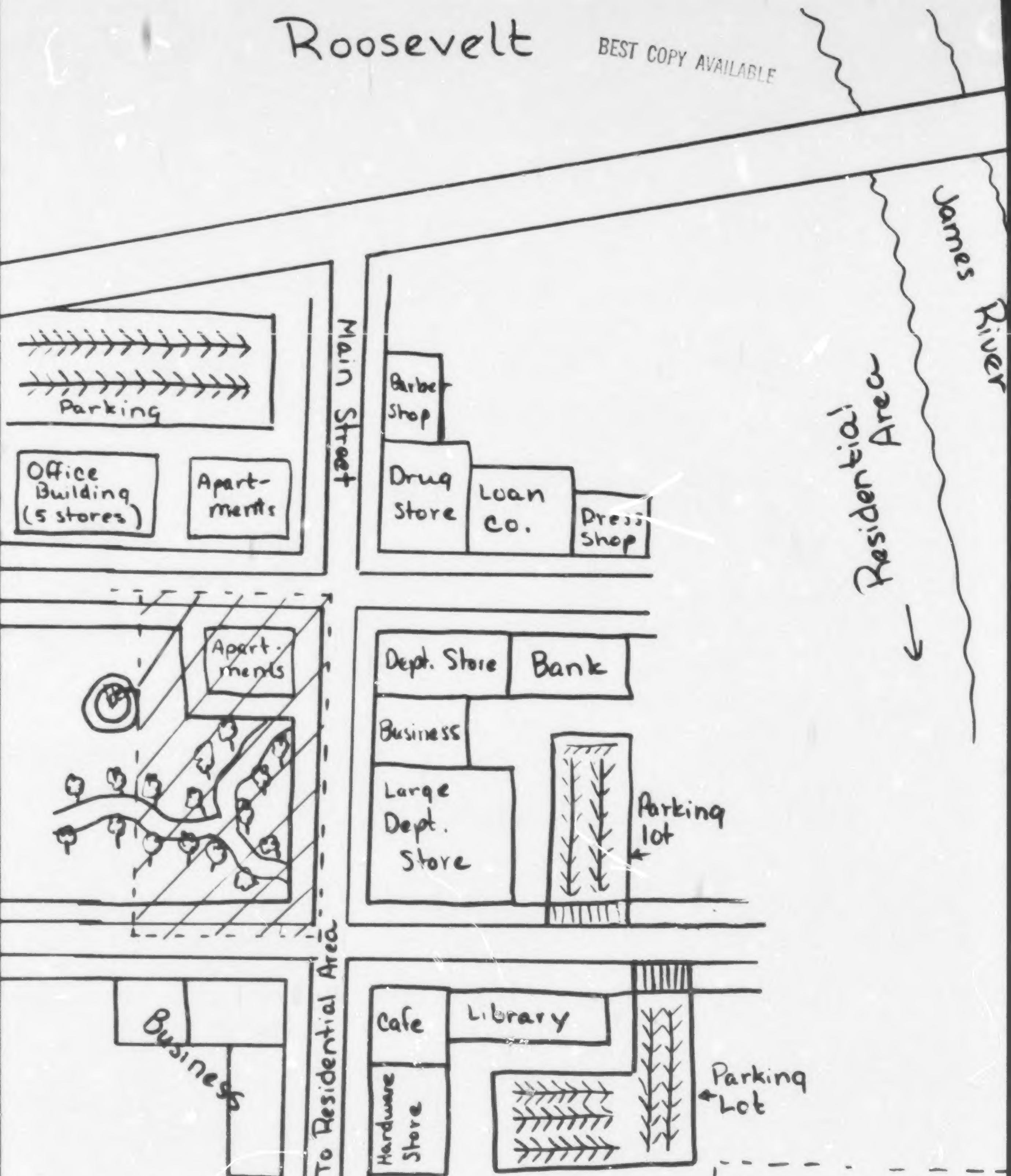

ACTIVITY

LAND USE

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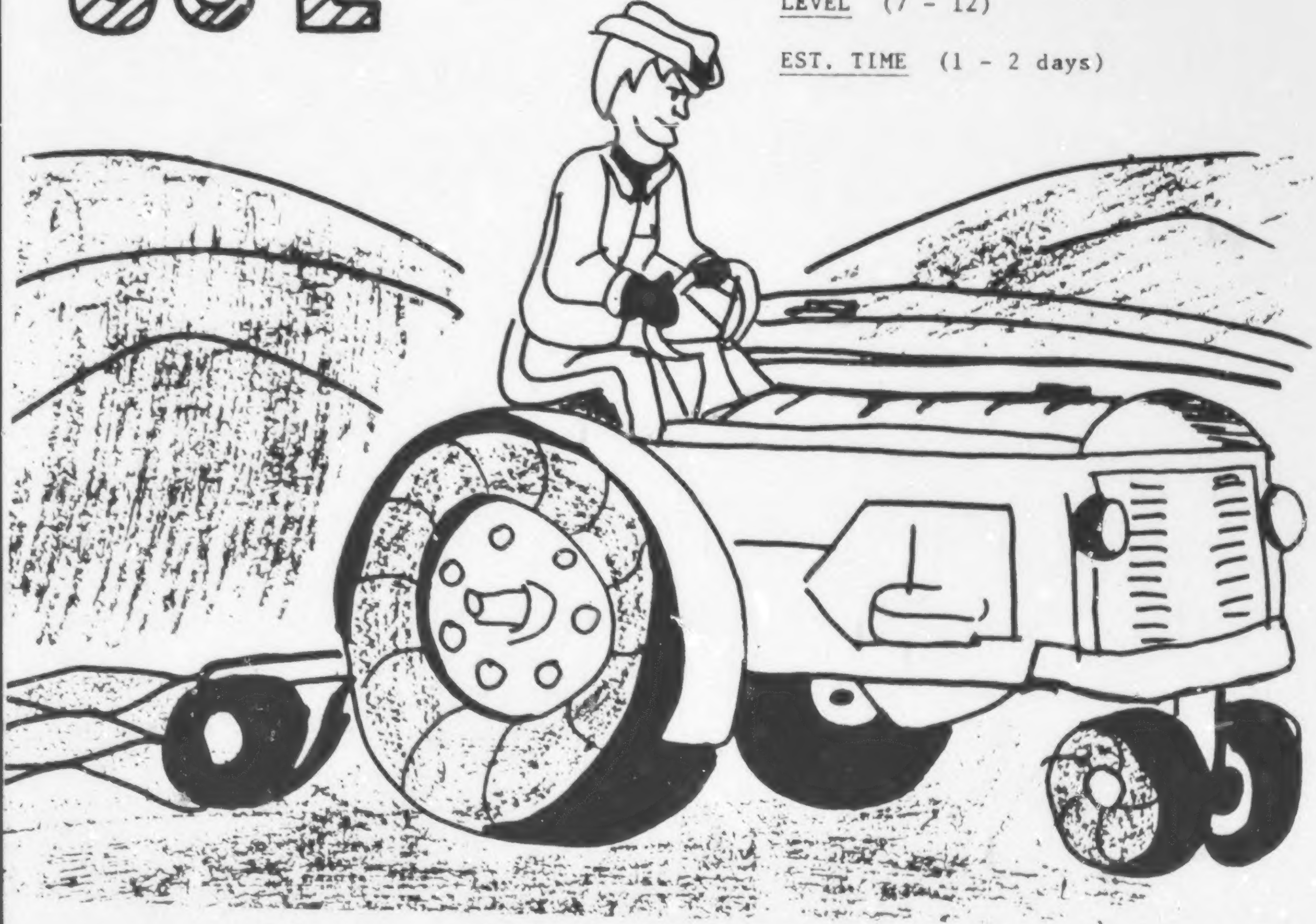
SUBJECTS L-13

Math
English
Social Studies

LEVEL (7 - 12)

EST. TIME (1 - 2 days)



MOVE OVER!

LAND USE - PARKING FACILITIES

PROBLEM SOLVING

Parking facilities in the urban environment can be planned for the most efficient land use.

LEVEL VI OBJECTIVE

The student will know the percentage of land space that is used for parking facilities in a given area.

OBJECTIVES

This is a very good Math activity, but can be used in an English or Social Studies class.

The students can do the activity as a group or separately. If they do it as a group, you will need to make field trip assignments.

Note - This activity can be correlated with ACTIVITY #L-15 dealing with counting the number of cars and numbers of people in those cars.

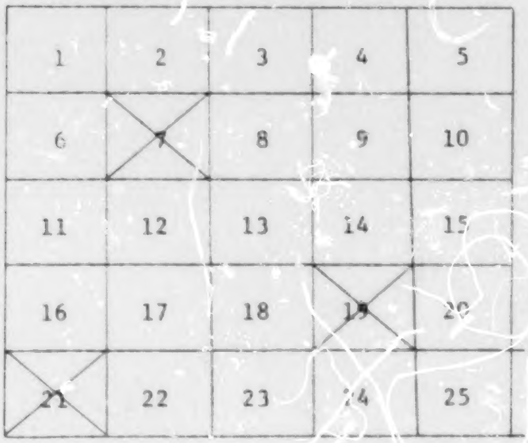
MATERIALS

Measuring device - You could improvise with a pre-measured length of heavy string.

TEACHER BACKGROUND

PRE - ACTIVITY

1. Randomly select three city blocks in a five-block-square area in the central business district of your city.
2. Measure each of these blocks in feet or yards.
3. Measure the areas that are utilized for parking facilities, including garages, parking lots, and store parking facilities, if present. Do not include above- or below-grade lots (we are only concerned with surface parking).
4. Compare or determine the ratio between that space utilized for parking in each block versus that utilized for buildings. Determine the mean for all three blocks.
5. What fraction of the total five-block area would you expect to be utilized for parking, based on your three-block sample? What percent?



1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25

ACTIVITY

LAND USAGE FOR PARKING FACILITIES - PROBLEM

1. If a car utilizes 300 square feet of parking area, how many cars can be parked in a rectangular parking lot that measures 130 feet long and 60 feet wide?
2. If land value in this area is $10 per square foot, what would be the total market value of this parking lot?
3. Omitting interest charges, taxes, and general expenses, how much would you charge your patrons for use of the parking facilities in order to realize $325 per week, for a 9 hour day and a 5 day week?

$______1st hour $______6th hour

$______2nd hour $______7th hour

$______3rd hour $______8th hour

$______4th hour $______9th hour

$______5th hour

TOTAL $______per day, $______per week

4. Could you "pay off" this lot within 5 years?

OTHER SUGGESTIONS

Locate a parking lot, and find:

1. What is its area?
2. How many cars can be parked?
3. What percentage of the parking lot is not used for parking stalls?
4. Compare this with other parking lots for land use.
5. Have a contest in which the students try to design a parking lot for most efficient land use.

ACTIVITY

L-14

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SUBJECT

Social Studies

LEVEL (7 - 12)

EST. TIME (2 or 3 days - open ended)

ELBOW ROOM

LAND USE INVESTIGATION

The remaining undeveloped land in our community is quite limited, and much of it may soon be subjected to development pressure. A well-planned community should contain neutral and open-space areas, and these affect the general quality of life in the community.

LEVEL VI OBJECTIVES

The student will know the percentage of undeveloped (open-space) land in his local community.

The student will know which groups tend to push land into development.

The student will know three specific values of open-space land.

OBJECTIVES

Economic considerations often mandate that land in urban and suburban areas be developed (subdivided and built on). The tax burden often forces people to sell land to developers.

Local zoning laws may favor development. Lot-size ordinances may promote crowding.

Population pressures in a growing community also tend to force development of all available land.

RESOURCES

City planners
    Local zoning ordinances

Local legislators
    Proposed or actual laws on open-space

County Assessor's office
    Tax rates on various land classifications

Local Chambers of Commerce
    Views on open-space land classification

Local realtors
    Land values
    Their views on development vs. open-space preservation

Puget Sound Governmental Conference (PSGC)
    "Interim Regional Development Plan" has a section on open space policy.
    "Implementing the Open Space Assessment Law" (May 22, 1971)
    "Project Open Space, Summary Report" and map (June, 1966)

Lynnwood (SW Snohomish County) Comprehensive Plan Book
    Available for perusal at Lynnwood Planning Offices - see maps reproduced at the end of this unit.

MATERIALS

Edmonds School District Maps (one for every 3 or 4 students)

Several maps on overhead transparencies would also be useful.

Maps available from the City Planning Department could also be used.

PRE - ACTIVITY

Consider current status of open-space legislation in your local area.

Discuss the value of green belts and open spaces in urban and suburban areas. Ask students if they feel they have sufficient open-space land in their local neighborhoods.

Ask this same question again after the mapping activity, (Task #2) below, has been completed.

ACTIVITY

1. Working in groups of 3 or 4, mark on the local map all those areas which you know to be currently undeveloped. This land should fit the classification of "open space" or "green belt", (e. g., woods, ravines, fields, vacant lots, marshes, public parks, etc.)
2. Combine all areas identified by the class onto an overhead transparency map. Estimate the total acreage of open-space land in the school district, or in your own local community. What approximate percent of the land is presently undeveloped open space?
3. Assign students to do on-site observation in some of the open-space land near their own homes. Have them report back to the class on the condition, features, and ownership status of the land.

POST ACTIVITY

Consider some of the areas identified and studied.

Discussion questions:

Who owns the land?

How is it zoned?

Estimate the taxes on the land if privately owned.

What is its potential value and probable fate?

What do you feel to be the "highest and best use" of this undeveloped area?

What forces may push the land into development?

EXTENSIONS

If students feel that some of the land should remain undeveloped, perhaps they could prepare a plan for its preservation and present the plan to appropriate city or county officials.

SUGGESTED SIMULATION GAME

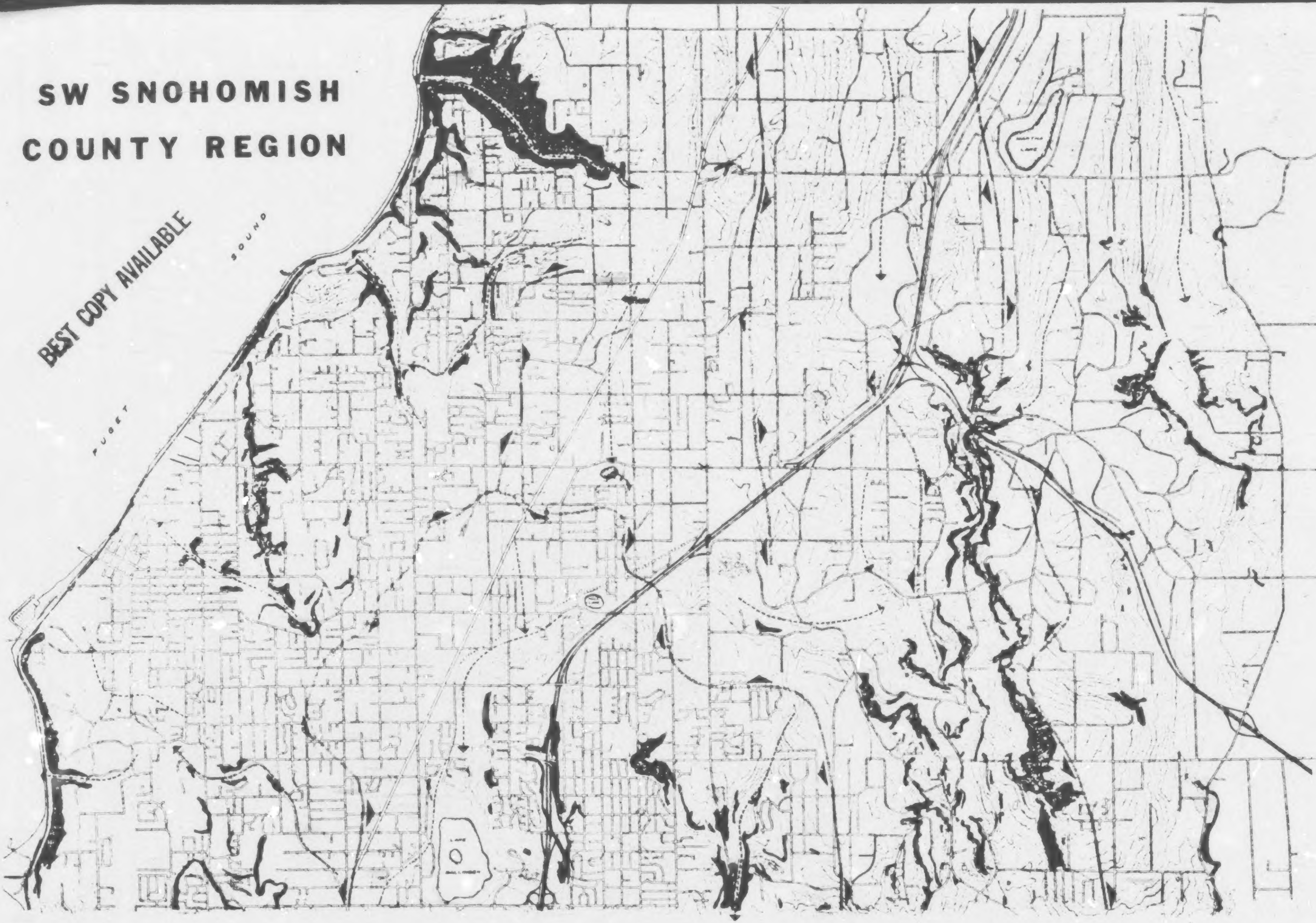
A wooded area (about 5 acres) in your community is owned by an elderly widow. A real estate company wishes to buy the land and construct a luxury-apartment complex. The stream flowing through the property might have to be modified to some extent to protect the property. Some trees would be preserved, but most would have to be cut to accommodate building, parking space, and grassy lawn. A group of local residents wish to retain the wooded area as a community park or green-belt area.

Concerned groups and individuals:

- Owner
- Real Estate Company
- City Planner
- Local Citizens' Open Space Committee

Situation: City Council hearing for zoning variance to permit the development.

SW SNOHOMISH COUNTY REGION



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NORTH

SCALE IN FEET

0 1000 2000 3000 4000 5000

PREPARED FOR THE
SOUTHWEST SNOHOMISH JOINT PLANNING COUNCIL
AUGUST [illegible]

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LAND CAPABILITY

▬	MAJOR WATERSHED BOUNDARY
- - -	MAJOR DRAINAGEWAY
▬	TOPOGRAPHY IN EXCESS OF 20% GRADE
■	SWAMPS & MARSHES
[illegible]	[illegible]NT LAND

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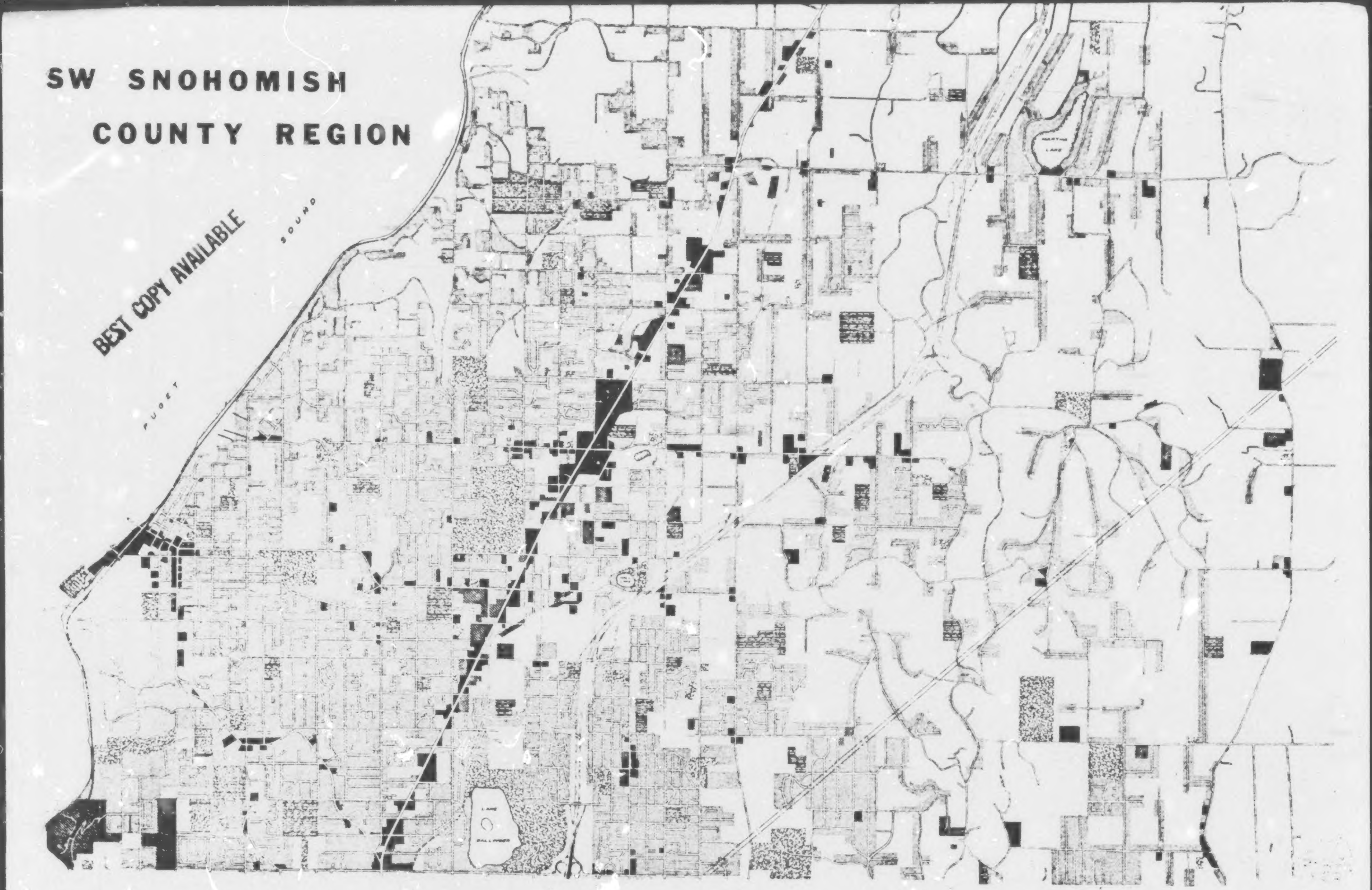
10

SW SNOHOMISH COUNTY REGION



PREPARED FOR THE
SOUTHWEST SNOHOMISH JOINT PLANNING COUNCIL,
AUGUST [illegible]

CLARK, COLEMAN & RUPEIKS INC.
City & Regional Planning Consultants Seattle

EXISTING LAND USE

- ▨ SINGLE FAMILY RESIDENTIAL
- ▬ MULTI-FAMILY RESIDENTIAL
- ▨ SPECIAL RESIDENTIAL
- ▬ COMMERCIAL & SERV
- ▨ MANUFACTURING & INDUSTRY
- ▬ EDUCATIONAL SERVICES
- ▨ COMMUNITY FACILITIES
- ▭ AGRICULTURE & OPEN

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TABLE 3

SOUTHWEST SNOHOMISH COUNTY
EXISTING LAND USE TABULATIONS
August, 1965

	UNINCORPORATED COUNTY			LYNNWOOD			MOUNTLAKE TERRACE			WOODWAY			BRIER			SURVEY AREA		
	Land Area	Percent Category	Percent Area	Land Area	Percent Category	Percent Area	Land Area	Percent Category	Percent Area	Land Area	Percent Category	Percent Area	Land Area	Percent Category	Percent Area	Land Area	Percent Category	Percent Area
RESIDENTIAL	(2,323.8)	(100.0)	(13.6)	(562.9)	(100.0)	(21.7)	(756.6)	(100.0)	(36.9)	(230.2)	(100.0)	(35.0)	(194.8)	(100.0)	(15.9)	(4,068.3)	(100.0)	(17.1)
Single Family	2,054.8	88.4	11.9	521.8	92.7	20.1	753.3	99.5	36.8	228.0	99.0	34.7	189.6	97.3	15.5	3,747.5	92.1	15.8
Duplex	9.6	0.4	0.1	5.0	0.9	0.2	0.7	0.1	*	0	0	0	0	0	0	15.3	0.4	0.1
Multi-family	25.9	1.1	0.2	7.5	1.3	0.3	2.2	0.3	0.1	2.0	1.0	0.3	0	0	0	37.6	0.9	0.1
Transient	8.6	0.4	0.1	6.8	1.2	0.3	0	0	0	0	0	0	0	0	0	15.4	0.4	0.1
Special	224.9	9.7	1.3	21.8	3.9	0.8	0.4	0.1	*	0.2	*	*	5.2	2.7	0.4	252.5	6.2	1.1
MANUFACTURING INDUSTRIAL	(125.3)	(100.0)	(0.7)	(44.0)	(100.0)	(1.7)	(27.6)	(100.0)	(1.3)	(8.8)	(100.0)	(0.3)	0	0	0	(205.7)	(100.0)	(0.9)
Light-Heavy Manufacturing	48.9	39.0	0.3	37.3	84.8	1.4	26.9	97.8	1.3	0	0	0	0	0	0	113.1	55.0	0.5
Wholesaling, Storage & Warehousing	76.4	61.0	0.4	6.7	15.2	0.3	0.7	2.2	*	8.8	100.0	1.3	0	0	0	92.6	45.0	0.4
TRANSPORTATION, COMMUNICATIONS, UTILITIES	(1,747.6)	(100.0)	(10.1)	(487.8)	(100.0)	(18.8)	(468.5)	(100.0)	(22.8)	(69.6)	(100.0)	(10.6)	(118.4)	(100.0)	(9.7)	(2,891.9)	(100.0)	(12.2)
Transp., Commun., Utilities	176.0	10.1	1.0	62.0	12.7	2.4	29.2	6.2	1.4	26.0	37.4	4.0	29.7	25.1	2.4	322.9	11.2	1.4
Street Highway ROW	1,571.6	89.9	9.1	425.8	87.3	16.4	439.3	93.8	21.4	43.6	62.6	6.6	88.7	74.9	7.3	2,569.0	88.8	10.8
COMMERCIAL & SERVICE	(154.9)	(100.0)	(0.9)	(72.5)	(100.0)	(2.8)	(12.6)	(100.0)	(0.7)	0	0	0	(58.3)	(100.0)	(4.7)	(298.3)	(100.0)	(1.3)
Retail Trade	24.1	15.5	0.1	41.2	56.8	1.6	8.9	70.6	0.5	0	0	0	0.5	0.9	*	74.7	25.0	0.3
Services	121.1	78.2	0.7	27.5	37.9	1.1	3.7	29.4	0.2	0	0	0	57.8	99.1	4.7	210.1	70.5	0.9
Other	9.7	6.3	0.1	3.8	5.2	0.1	0	0	0	0	0	0	0	0	0	13.5	4.5	0.1
COMMUNITY FACILITIES	121.8	100.0	0.7	184.2	100.0	7.1	30.9	100.0	1.5	0.3	100.0	0.1	0	0	0	337.2	100.0	1.4
PARKS, RECREATION & RESERVE	125.5	100.0	0.7	24.8	100.0	1.0	49.4	100.0	2.4	0	0	0	0.6	100.0	0.1	200.3	100.0	0.8
EDUCATIONAL SERVICES	264.4	100.0	1.5	86.0	100.0	3.3	77.4	100.0	3.8	0	0	0	11.1	100.0	0.9	438.9	100.0	1.8
AGRICULTURE - EXTRACTION & OPEN	(12,362.5)	(100.0)	(71.8)	(1,134.4)	(100.0)	(43.6)	(627.1)	(100.0)	(30.6)	(348.0)	(100.0)	(53.0)	(839.9)	(100.0)	(68.7)	(15,311.9)	(100.0)	(64.4)
Agriculture - Resource Production & Extraction	468.4	3.8	2.7	2.5	0.2	0.1	0	0	0	0	0	0	15.4	1.8	1.3	486.3	3.2	2.0
Undeveloped/Vacant Land	11,832.4	95.7	68.7	1,125.7	99.2	43.3	528.4	84.3	25.8	348.0	100.0	53.0	817.5	97.3	66.8	14,652.0	95.7	61.7
Water Areas	61.7	0.5	0.4	6.2	0.6	0.2	98.7	15.7	4.8	0	0	0	7.0	0.9	0.6	173.6	1.1	0.7
TOTALS	17,225.8		100.0	2,596.6		100.0	2,050.1		100.0	656.9		100.0	1,223.1		100.0	23,752.5		100.0
PERCENT OF SURVEY AREA	72.5			10.9			8.6			2.8			5.2			100.0		

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* Less than 0.1%

LAND USE

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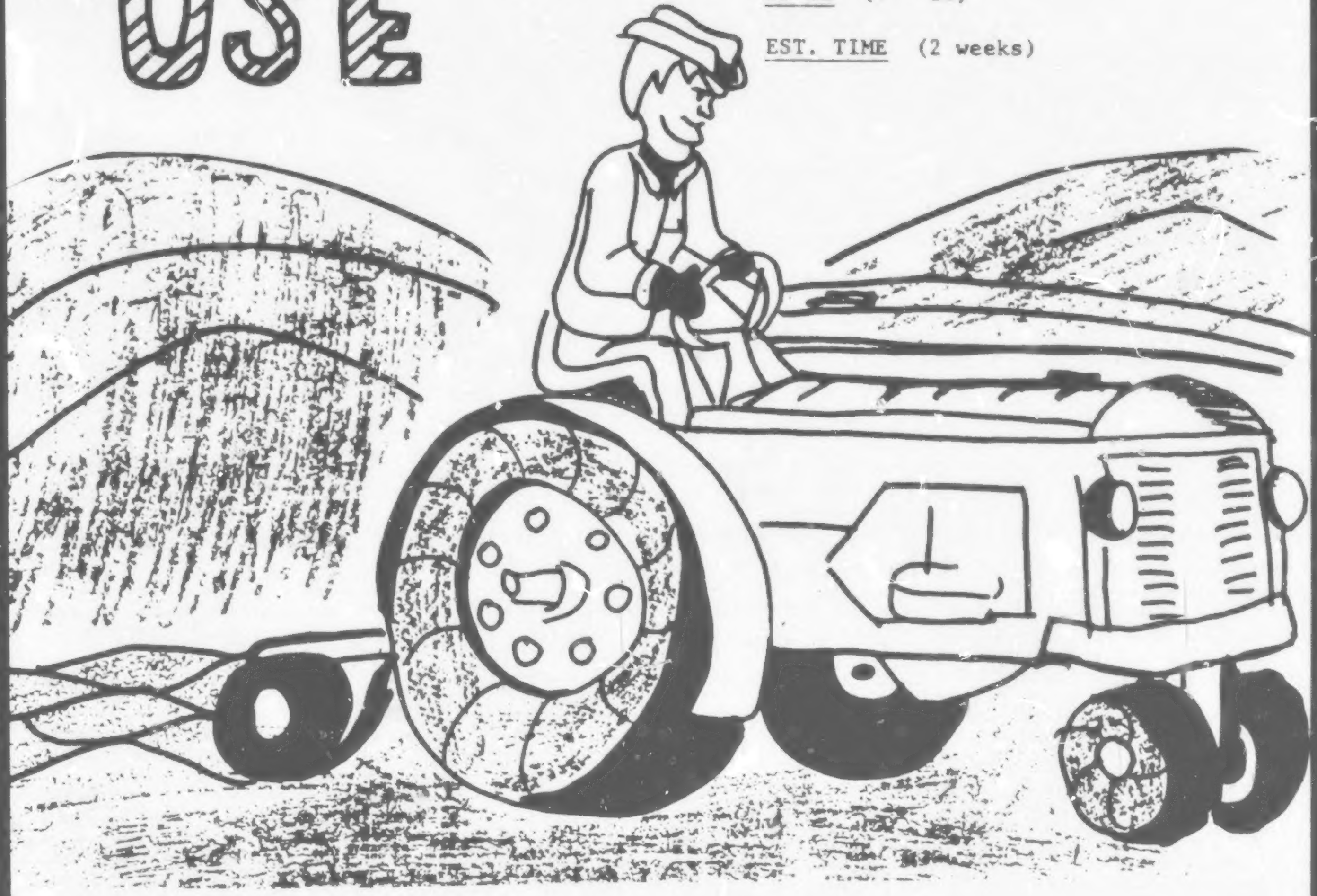
L-15

SUBJECTS

English
Social Studies

LEVEL (7 - 12)

EST. TIME (2 weeks)



TRANSPORTATION

LAND USE

Transportation has a direct affect on land use and man's environment.

LEVEL VI OBJECTIVE

The student will be able to produce three alternate solutions to existing pollution problems caused by automobile transportation.

OBJECTIVES

TEACHER INSTRUCTIONS FOR STUDENT FOLLOW-UP ACTIVITIES

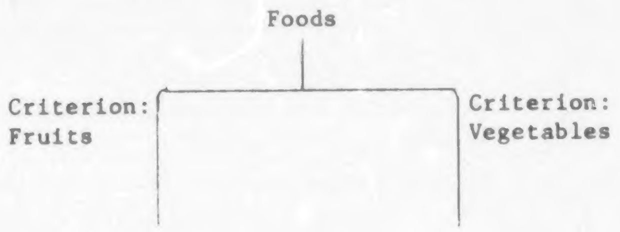
In most cases, the Student Follow-up Activities are self-explanatory. For your assistance, the following information is given:

A. Task 1, #3: Dichotomous Key Instructions

A dichotomous key is an activity in which students look closely at a group of "things" (houses, cars, stores, rocks, etc.) in an environment, and break the groups down into a logical key based on major similarities and differences. The activity will help the students observe closer, to classify things, to communicate with one another, and to become more aware of what makes up the environment.

1. All groups of things in the environment can be classified into groups and keyed.
2. Keys should be adapted to grade levels, abilities, and subject areas you are teaching.
3. Students working in small groups are recommended.
4. All groups should be working with the same objects.
5. You may need to give the students an example. Start them off with a simple group of objects to divide.

EXAMPLE:
Group: Foods
Objects: Lemon, potato



Using your own criteria, construct a dichotomous key (2 parts). Start by separating objects into two groups. Then divide each of these groups into two more groups based on major similarities and differences. Continue the process until you are left with one object in each group or at the end of each line of your key.

EXAMPLE:
This example is for your information. The inventory was compiled from an actual experience. Note that many objects become difficult to work with. You might consider some familiar objects in the classroom for the first experience, i. e., books, P. E. equipment, shoes, etc.)

MAJOR GROUP: Businesses

Objects:
Drug Store
Department Store
Photography Studio
Cleaners
Print Shop
Hotel
Service Station
Loan Company
Figure Salon
Tavern
Florist
Donut Shop
Grocery
Bank

B. Task 1, #5, 6, and 7

These activities are designed to involve students in research, either in a library or a resource center, or at home with Mom and Dad, brothers and sisters.

C. Task 1, #8

Interviews of car dealers could reveal the new laws regarding construction of automobiles concerning safety. They would also have materials showing how their cars probably "exceed" these standards.

D. Task 4, #6

Macaroni cars are very easy to make, they are fun, and they offer students an opportunity to be creative. To make them:

1. Have students bring a small amount of- different types of macaroni to school to use and to share with other students. This should include spaghetti for axles, wide noodles (lasagne type), spaghetti wheels, and any others that would be appropriate.

2. White glue, such as Elmer's, is all that is needed to assemble the cars. Have students glue and hold in place a couple of minutes to dry. The end result will be cars that look like Flintstone jalopies.

E. Task 4, #8

Students could collect this kind of data from newspapers or magazines at home, or by visiting car dealers in their city. Recommend this as an after school activity.

PRE - ACTIVITY

Plan for a trip to your city center - suburban, metropolitan, or small town. Small groups are recommended. (Parent leaders, high school student assistants, college students, senior citizens are possibilities.)

ACTIVITY

TASK CARD 1

TASK 1 - Transportation movement Name____________________ Date________

Record everything moving that relates to transportation. Do this for exactly fifteen minutes. List each thing one time only.

________________ ________________ ________________

________________ ________________ ________________

________________ ________________ ________________

________________ ________________ ________________

________________ ________________ ________________

TASK CARD 2

TASK 2 - Tools of transportation Name____________________ Date________

Select one of the above modes of transportation. Record all the things you see that make movement safe and easy. (i. e., for a pedestrian: sidewalks, litter receptacles, stop signs, stop lights, crosswalks, etc.)

________________ ________________ ________________

________________ ________________ ________________

________________ ________________ ________________

________________ ________________ ________________

TASK CARD 3

TASK 3 - Car colors and count Name____________________ Date________

The chart below is for recording data. First, look at the cars around you and record the most common colors used. Write them in the boxes provided.

Then for fifteen minutes record the number of cars you see of each color. Mark in the boxes. Total the number of cars of each color and record in the box. Add up all the totals for your grand total.

Car Colors:							
Number of Cars:							
Total:							
						Grand Total:	

TASK CARD 4

TASK 4 - Older and newer cars Name____________________ Date________

For fifteen minutes put a tally mark in the appropriate box for the older (two years and older) and newer (less than two years old) cars you see. Total your count for each.

New cars	Older cars	
		Total

ACTIVITY

TASK CARD 5

TASK 5 - People in cars Name____________________ Date__________

For fifteen minutes, put a tally mark in the appropriate boxes for the number of people in each car you see. Total your count for each.

	1 person per car	2 people per car	3 people per car	4 people per car	5 people per car	6+ people per car
Tally of cars						
Number of cars						
Total people						

POST ACTIVITY

Fill out POST ACTIVITY cards on returning to the classroom.

ACTIVITY

Name ________________________________ Date ____________________

POST ACTIVITY TASK 1 - Transportation movement

Refer to the data you collected in ACTIVITY TASK 1.

____________	____________	____________
____________	____________	____________
____________	____________	____________
____________	____________	____________
____________	____________	____________

2. In your small group, classify the items into two groups of comparable characteristics. Example: large or small, commercial or non-commercial, cars or trucks.

Group 1	Group 2
____________	____________
____________	____________
____________	____________
____________	____________
____________	____________
____________	____________
____________	____________
____________	____________
____________	____________
____________	____________
____________	____________

3. On another sheet of paper, construct a DICHOTOMOUS KEY. Your teacher has the instructions.

ACTIVITY

Name ______________________________ Date ______________

POST ACTIVITY TASK 2 - Tools of Transportation

1. In small groups, list all developments that each mode of transportation had in common:

2. Are these all necessary? __________ If one could be eliminated, which one would you choose and why?

3. Which one of these developments is most important? Why?

   What would be the effect on the environment if it suddenly disappeared?

ACTIVITY

4. Can you think of any other modes of transportation that you didn't see when collecting data? List them:

______________ ______________ ______________

______________ ______________ ______________

______________ ______________ ______________

5. Think of the smallest town you have visited. What vehicles did you see there, or on the way, that were not seen here?

______________ ______________ ______________

______________ ______________ ______________

6. What forms of transportation did you find in your environment that you wouldn't find in a smaller city? A larger one?

______________ ______________ ______________

______________ ______________ ______________

Why?____

____

____

7. Do other countries have different types of transportation not listed here? List some:

______________ ______________ ______________

______________ ______________ ______________

Could any of these be adapted to this environment? Which ones, and how?

____

____

8. Were all the vehicles you saw safe? Why or why not?

____

____

____

ACTIVITY

Name____Date_____________________________

POST ACTIVITY TASK 3 - Car colors

1. Were most of the cars dark or light?____

2. What color was most common?______________________Why do you think this is so?______

3. If you were buying a car, what color would you like?___________________________Why?

   What other things would you consider in buying a car?______________________________

4. What are the advantages of buying a:

Light colored car?	Dark colored car?

5. Why are dark colored cars hot in the summer?____

6. Would they be as hot each hour of the day?__________Explain your answer:__________

ACTIVITY

Name ______________________________ Date ______________

POST ACTIVITY TASK 4 - Old and new cars

1. What is the ratio of older cars to newer cars in your sample? ____________

2. Do older cars pollute the air more than newer cars? ________ Why? ____________

Is there anything that can be done to improve the older car to reduce pollution?

What equipment is on new cars to help reduce pollution? ____________

What are gasoline companies doing to help reduce pollution? ____________

3. Did you have trouble deciding whether cars were older or newer? ________ Why? ____

4. List some of the things that make older cars look like new: ____________

ACTIVITY

5. Use drawing paper to illustrate the car of the future. Describe your car: ____________

6. Make a macaroni car. (Your teacher has the instructions.)

7. Design a contest for the best macaroni car in different categories. Make macaroni trophies for the winners.

8. What are the names of cars on the market in your city?

9. How many cars can you think of that have been named after animals?

10. Why have many cars been named after animals? ____________

ACTIVITY

Name____Date______________________

POST ACTIVITY TASK 5 - People in cars

1. How many cars did you count in 15 minutes?____________________________

2. How many cars would this be per hour?________________________________

3. How many passengers were in these cars?______________________________

4. How many passengers would this be per hour?__________________________

5. What is the average number of passengers per car?____________________

6. How many full cars (6 people) would it take to move the total number of passengers you counted?

   ____

7. Compare the number of cars it takes to move one person per car to the number of cars it takes to move six people per car:

   ____

8. Were there more total people moved with six people per car than with one person per car?

   ____

9. What is the effect of cars on the environment?________________________

10. What are your ideas to help eliminate the pollution problems related to moving people in cars?

   ____

   ____

   ____

   ____

   ____

   ____

L-16

SUBJECTS

Social Studies
Biology

LEVEL (10 - 12)

EST. TIME (2 days)

BEST COPY AVAILABLE

Plan
To Limit
Growth
Studied

'Limit People, Cut Costs'

Shaded areas show 1,000 acres of undeveloped land on Mercer Island.

LOCAL POPULATION CONTROL

SIMULATION GAME

LAND USE AND POPULATION

Excessively dense population can damage the quality of life in a local community.

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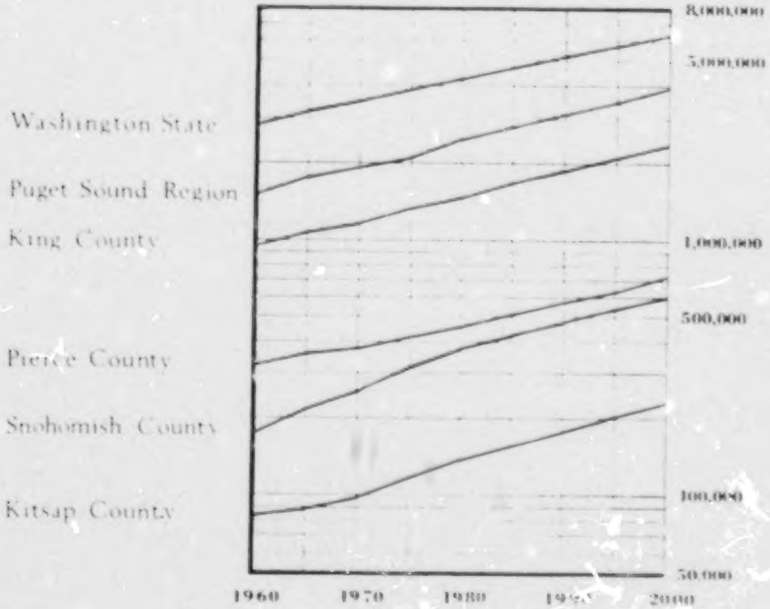
In this activity, students will consider the relationship between population density and the quality of life in their own community. They will gain insight into the complexity of an environmental issue as they discover differences of opinion within the community and within the class.

PUGET SOUND GOVERNMENTAL CONFERENCE

POPULATION PROJECTIONS



LEVEL VI OBJECTIVES

The student will know what the optimum population is for a particular land area.

The student will know three effects which population growth has on a local municipality.

OBJECTIVES

A novel approach relating preservation of greenbelts to local population limitation was the Moss-Ralston Plan proposed for Mercer Island during 1970-1971. This plan proposed to buy all undeveloped land on the island with tax money, and hold this land as greenbelts. This measure, along with appropriate zoning of already developed land, would put an upper limit on the population of the community. Proponents of the plan maintained that the community would save money in the long run by limiting demand for additional public services such as sewers, schools, roads, etc. This particular plan was voted down by the citizens of Mercer Island in November, 1971.

MATERIALS

For each student: Copy of the Propositions

For each Concern Group: Index card with group descriptions and list of basic viewpoints.

Copies of Mercer Island Plan newspaper articles.

REFERENCES

Newspaper articles on the Mercer Island Plan (See following pages).

Seattle Times, Sunday, March 29, 1970, p. A14.
Seattle Times, Sunday, October 31, 1971, front page and E5.

RESOURCES

Parents

The local community

TEACHER BACKGROUND

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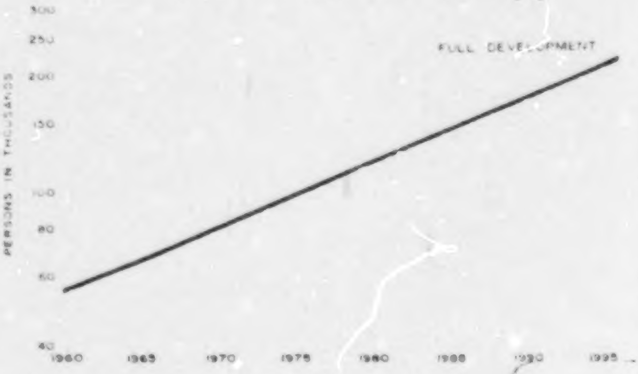
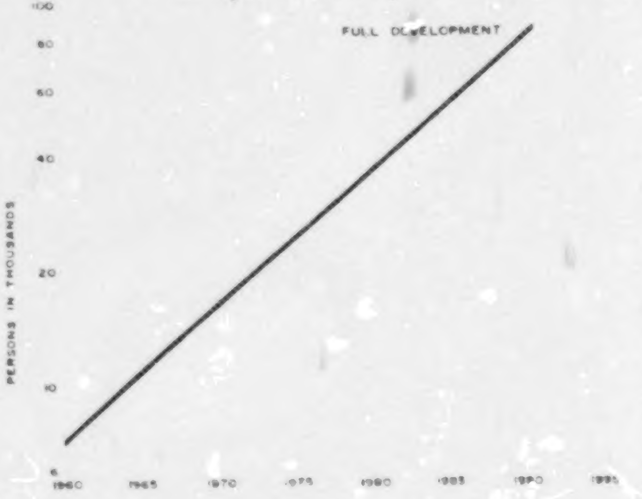
PLANNING AREA POPULATION ESTIMATE
(S.W. Snohomish County)



From Lynnwood Comprehensive Plan

LYNNWOOD POPULATION ESTIMATE
(From Lynnwood Comprehensive Plan)



PRE - ACTIVITY

Assign roles to class members, or have them choose roles. (See following pages for propositions and interest-group descriptions.)

Four students should be assigned roles of council members, one role of mayor.

Each student group should research the views and philosophies of the interest group it is to represent, and prepare a testimony accurately presenting the group's argument.

Encourage students to interview people in the community; use newspapers, magazine articles, etc., to find out the position of the interest group they are to represent. Students should realize that changing conditions have probably altered the groups' positions.

ACTIVITY

Simulation Involvement - Edmonds City Council Hearing

Councilmen and mayor decide on procedures for the hearing, listen to testimony of various groups, then come to a decision on the propositions based on the testimony presented.

See the "Involvement in Environmental Issues ....Process" in the introductory packet for details and task cards to use in a simulation activity.

LOCAL POPULATION CONTROL SIMULATION INVOLVEMENT - EDMONDS CITY COUNCIL HEARING

Proposition:

> Shall Edmonds establish a population limit, based on best estimates of the optimum population density compatible with a desirable quality of life and provision for adequate "open space" (parks and greenbelts)?

This proposition follows the Moss-Ralston plan originally considered for Mercer Island. Basically, it involves purchase of undeveloped land by the city for the same cost as would otherwise be required to build streets, drainage and water systems, etc., for the expected population influx, were these areas left open to development. Zoning laws would restrict the number of multi-family housing units on land remaining open to development. Planning should be carried out in cooperation with county, regional, and state planning commissions.

Related Proposition:

> Shall the city assure that a variety of birth control methods be available to all its citizens; support or subsidize low-cost abortion; and tax all families giving birth to a third or higher-number child later than one year after such a tax law is passed?

Concerned Groups Testifying:

1. Zero Population Growth (See ideas of Dr. Ehrlich in The Population Bomb and Population/Resources/Environment)
   - a. U.S. (and world) population must level off.
   - b. A certain area of land can support a limited number of people in a quality environment.
2. Snohomish County Environmental Council
   - a. Open space and a pleasant environment are necessary for sanity, recreation, etc.
   - b. All growth and development of urban and suburban areas should be carefully planned.
   - c. Overcrowding means loss of environmental quality, cheapens value of individual life, etc.
3. Catholics and other religious groups with similar stands on birth control.
   - a. Abortion = Murder
   - b. Artificial methods of contraception are not accepted by the Pope.
4. Parents having or desiring large families.
   - a. Maternal instinct? (Interview some.)

5. John Birch Society and other far-right conservatives

    a. Violation of individual rights.

    b. Leads toward total government control and Communism.

6. Chamber of Commerce

    a. Need for new industry, growth, and progress.

    b. Economy must continue growing at a healthy rate. (Call them and find out.)

7. Building contractors, construction companies, and real estate firms

    a. Might be bad for business. (See what some of them say.)

8. Individuals (Can you formulate and express your own views?)

    e. g , Who is going to set this population limit, and what criteria would they use?

    Who makes the "best estimates" of optimum population density?

ACTIVITY

POST ACTIVITY

Class Discussion of the Hearing Results

Has the time yet come for these propositions?

Are they practical in the context of present society and local conditions?

Will local limits on population someday become the general rule?

How is quality of life affected by population density?

Is it possible to maximize both number of people and the quality of their lives?

How can optimum population be defined, realized, and maintained?

What is the optimum population of the Edmonds area?

Could population control become a local matter, as proposed during 1970-1971:

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A 14 The Seattle Times
Sunday, March 29, 1970

Plan To Limit Growth Studied

Mercer Island City Manager Don Hitchman will report by May 1 on the feasibility of a plan to buy up the island's remaining undeveloped land and limit population.

Hitchman is studying what has been called the Moss-Ralston report, after Richard Ralston and Robert Moss, island residents, who came up with the idea last fall.

Mercer Island's City Council listened to Moss and Ralston and asked them to prepare a report on the idea. The two formed an ad hoc committee, conducted a four-month study and submitted their report to the council, which asked Hitchman to evaluate it.

The island's population presently is about 18,500. If the remaining 1,000 undeveloped acres of land on the island are developed under present zoning regulations, the population could increase to 31,500, the report said.

A POPULATION of 31,500 would mean a student population in island schools of about 9,000. To provide quality education and facilities for that number, a public investment of $15 million was estimated.

Drainage and water systems to support 31,500 people would cost an estimated $10 million. Thus a total public capital investment of at least $25 million would be required, not including funds for expanded street systems, police service and continuing maintenance.

The Moss-Ralston plan said that for the same amount of money, 670 acres of the presently undeveloped land could be acquired and a controlled population of 22,500 maintained.

The ad hoc committee estimated $12 million would be necessary to acquire the land, which would be used for parks, greenbelts and open space areas. A population of 22,500 would require a school construction program of about $8 million, to provide a quality education for an estimated 6,600 students.

Water and drainage systems would cost about $4 million, adding up to a total of $25 million for land acquisition, schools and water and drainage systems.

Moss and Ralston argue their plan would protect the island from overdevelopment and slow down escalating taxes they say would result from unchecked population growth.

"MORE OPEN space would increase the value of residents' property," Ralston said. "Also, the maintenance costs of facilities and services for a population of 22,500 would be less than the costs of the services and facilities for 31,500."

If the idea is approved, financing would require voter approval. But Ralston said there are a number of ways of raising the money.

An all-island local improvement district, federal and state matching funds or Forward Thrust funds are possibilities, he said.

Whether the plan will go into effect may be determined largely by Hitchman's report. If approved, the plan could go before voters in an advisory election later this year.

Greenbelts on island ballot

Should Mercer Island residents tax themselves to acquire undeveloped land and preserve it from future development?

There are some persons on the island who say the city should buy undeveloped land and leave it — as it now is — in greenbelts and open spaces. And there are others who say this is economic nonsence.

VOTERS on the island will make a decision on the island's future in the general election Tuesday. They will be asked to approve or reject a $2 million bond issue. The money would be used to purchase undeveloped acreage on the island.

"This started out as the Moss-Ralston proposal, but in its present form we simply call it the Greenbelt plan," said Mayor Aubrey Davis, Jr. Richard Ralston and the late Robert Moss, island residents, originally proposed the idea. Davis and other City Council members are supporting its passage.

"This is one of the few times, I think, when a community is going to make a decision on its future," Davis said. "It is the kind of thing many communities, when they're saturated, look back and wish they had done."

If the measure is defeated at the polls the losers will be the children and grandchildren of those who now live on the island, he said. "If we don't do something it will be built upon and fully housed from shore to shore."

THERE ARE about 900 acres of undeveloped land left on the island. Proponents of the bond issue say about 50 acres are lost to development each year.

The Greenbelt plan would enable the city to purchase about 400 acres, mainly ravines and hillsides, its proponents contend. Removing the land from development potential would limit the island's ultimate population from original estimates of 32,000 to about 28,000, they say.

But Davis describes the bond issue as "a quality of life measure, a way of saving something which has to be saved now or not at all."

Henry H. (Hank) Furman, a candidate for the City Council, disagrees. Proponents of the bond issue have conducted what Furman calls a "scare campaign," saying that if the issue fails it will have serious social and ecological effects on the island.

"We say that buying approximately 160 acres of steep ravine land is highly impractical and a poor investment for the taxpayers," Furman said. The topography of the land to be acquired is a built-in restriction against development, Furman added.

Furman and his campaign manager, Don Crouch, challenged the accuracy of cost figures advanced by a City Council subcommittee that studied the issue.

"They have indicated there will be many offsetting savings if the land is acquired," Couch said. "These savings cannot be supported by any figures."

COUCH, WHO said he also is a member of a taxpayers' committee opposing the issue, said passage of the bond issue could "prejudice the school district in its attempt to pass any bond issue in the future." He pointed out that the island has not been reassessed and property owners will not know their property-tax obligations until reassessment takes place.

Furman and Crouch also pointed to a subcommittee recommendation that zoning and building-code changes could be effective tools in retarding development and that these should be fully explored "before taxpayers are asked to increase their burden."

If the bond issue passes, a special commission would be appointed to oversee the land purchases.

ACTIVITY

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'Limit People, Cut Costs'

Mercer Island Studies Plan To Purchase Unused Land

By SAM R. SPERRY

Mercer Island residents may get a chance to vote on a plan to buy almost two thirds of the island's undeveloped land to protect their environment, limit the number of people on the island and cut costs of schools and government.

The proposal may go to voters sometime this year if city officials approve a study contending that a restricted land-use plan is a favorable alternative to the urban crunch that experts say is in store for Mercer Island.

THE IDEA is simple. There are about 1,000 acres of undeveloped land on Mercer Island. By purchasing 670 acres of that land for parks, open space and flood plain, the population of the island can be controlled, according to the study. This would result in reduced capital investment for schools and municipal services, fewer urban problems and preservation of the natural setting residents now enjoy.

"We were a little tired of people equating progress with growth," said one island resident, Robert Moss. "We couldn't accept that assumption."

Moss, a physicist at The Boeing Co., and Richard Ralston, a general contractor, are concerned that under existing zoning the island's present population of about 18,500 would increase to 31,500 in 20 years.

They winced at figures for the capital investment required to accommodate that many people: $15 million for school construction, $6 million for a drainage system, more than $4 million for a water system, plus the additional costs for streets and other services that another 13,000 people would require.

Moss and Ralston also are disturbed by what such a population increase would do to the quality of life on Mercer Island.

"The reasons people had for moving here have diluted," Moss complained.

"I don't want to lose this quiet and seclusion," Ralston said, pointing to the thick woods that surround his East Mercer Way home.

THE TWO wrote a letter to the Mercer Island City Council explaining their idea and the council, responding, asked them to form an ad hoc committee to study the idea.

Moss and Ralston were joined by John Edmonds, an attorney; James Buckley, an oil-company executive, and William Revercomb, an investment banker. John Lackland and George Mack served as special legal consultant. They studied the idea for four months.

The committee prepared what is known as the Moss-Ralston report. The report now is being evaluated by the city.

The report says that for about the same amount of money now planned for capital facilities needed for 31,500 people, the city can buy 670 acres of the remaining 1,000 acres of undeveloped land.

THE REPORT concludes that the cost of acquiring the 670 acres would be $14.7 million; but that if the land were acquired and a population ceiling of 22,500 established, school capital investment could be reduced from $15 to $5 million, drainage systems from $6 to $2 million and a water system from $4 to $2 million.

The qualitative benefits of fewer people cannot be measured exactly, Moss and Ralston admit. But they assert that the island would be a much better place to live if the growth is planned properly.

The Moss-Ralston report was submitted to the City Council March 2. The city manager's office was requested to study and evaluate it and report back on it May 1.

It is hoped that an advisory election can be held to detrmine if island residents would approve the plan, possibly at the September primary election.

ACTIVITY

L-17

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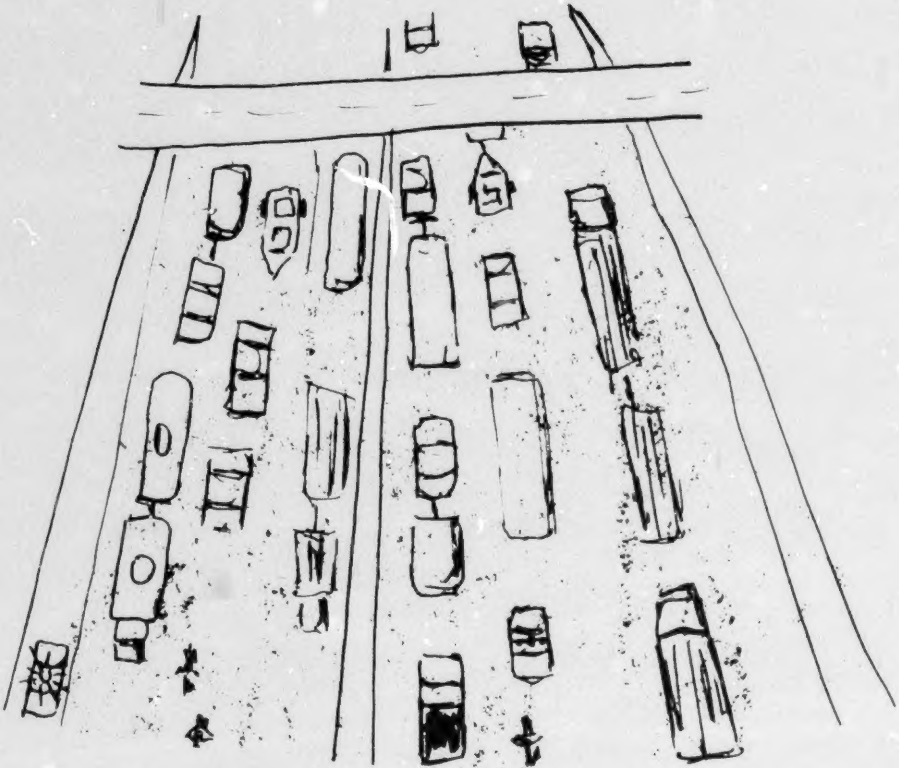
SUBJECTS

Math
Social Studies

LEVEL (7 - 12)

EST. TIME



VACATION TRAVEL

LAND USE

DATA COLLECTING

GRAPHING

The way people are using their leisure time is placing a severe strain on existing transportation lines and available facilities during certain peak hours and days of the week.

LEVEL VI OBJECTIVES

The student will know three principal activities used in recreational or free time by a sample of families in the local community.

The student will be able to offer two alternative solutions to problems of overcrowded recreation facilities.

OBJECTIVES

MATERIALS

Supply of survey forms for class members:

FREE TIME USAGE - Check 2 in each area (priority 1 & 2).

Around the house		Indoor activities		Outdoor activities	
Gardening		Going to movies		Picnicking	
Reading		Sports events		Visiting parks	
Watching TV		Visiting friends		Golf	
Entertaining		Other		Other	
Other					

ONE-TWO-THREE DAY WEEKENDS - Check 3 of the following (priorities 1, 2, 3).

Activities		Transportation	
Camping		Car	
Fishing		Pickup camper	
Hiking		Trailer-camper	
Climbing		Bus	
Touring		Airplane	
Skiing		Bicycle touring	
Water skiing		Motorbiking	
Other		Other	

ANNUAL VACATION - MORE THAN THREE DAYS

Please indicate the type of activity you would do: ______________________________

____

____

Check one in each column:

How did you find the facilities you visited?	Crowded	☐	Uncrowded	☐
	Clean	☐	Inadequate	☐
	Adequate	☐	Dirty	☐

Transportation - during what time did you travel?

During the week ☐ Friday afternoon ☐ Sunday afternoon ☐

PRE - ACTIVITY

Discussion of the amount of free time available to people today and how it is used; possibly classifying it into three categories: daily, weekend, annual vacation.

Discuss what areas or types of areas are most heavily used.

ACTIVITY

Break class into 4 - 5 groups.

1. Using the survey sheet, contact two other families as well as your own and determine their use of their free time.
2. Members of each group will combine the results of their surveys.
3. Set up graphs to show your results in terms of percentages of time spent in each activity, and means and time of travel.

POST ACTIVITY

Each member will write a statement as to what might be done to change the patterns and thus lessen or spread out the usage of facilities.

ACTIVITY

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L-18

TOPIC Floodplain Management - Land Use

LEVEL Sr. High

ESTIMATED TIME 2 Days Open-ended

SUBJECT AREAS Social Studies
Biology

MIDDLE FORK DAM, SNOQUALMIE RIVER

A SIMULATION GAME

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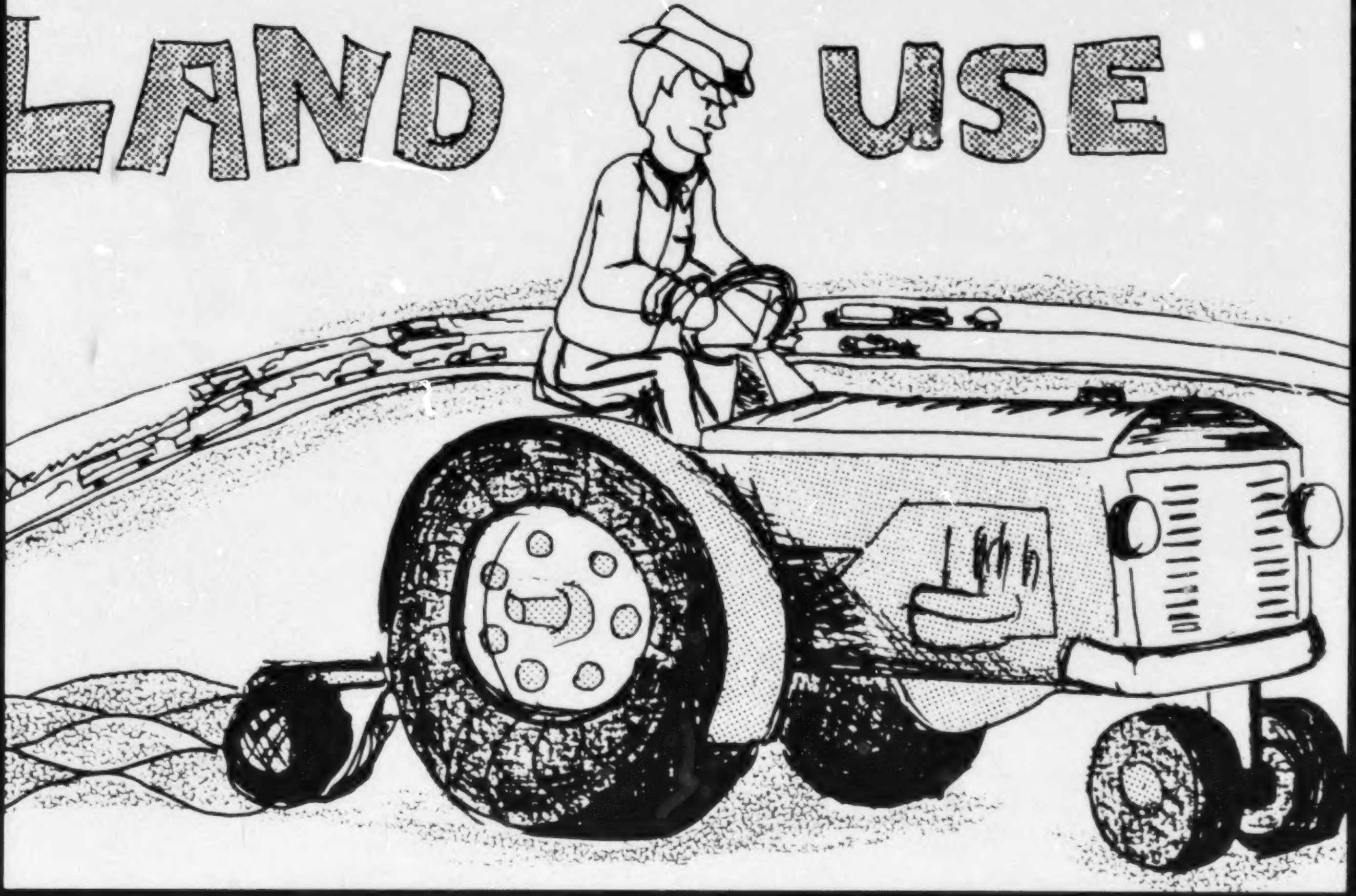

Floodplain management is a complex land-use and water resources issue. Dam-building is only one alternative for floodplain management, and it may create at least as many problems as it solves.

In this activity, the student will role-play the position of a particular interest group in a public hearing situation. After considering various opinions and evaluating data, the student will make a personal decision on an issue related to the larger problem of Snohomish River drainage system management.

LEVEL VI OBJECTIVE

The student will know the following alternatives for management of floodplains: floodplain zoning, flood insurance, levies, dams, and industrialization.

MATERIALS: Assignment cards for different interest groups.

A map of the Snohomish River system would be helpful.

RESOURCES: Army Corps of Engineers

Washington Kayak Club, Conservation Committee

OBJECTIVES

TEACHER BACKGROUND:

The idea of a dam on the Middle Fork of the Snoqualmie River has been kicked around for a number of years. The issue may soon be resolved when Governor Evans makes his recommendation on the matter, based on a detailed study of alternatives by the Army Corps of Engineers. This study included a number of public hearings. Some 14 alternatives for floodplain management were considered. Non-structural alternatives include floodplain zoning (limiting building and preserving agricultural uses on the natural floodplain), subsidized, low-cost flood insurance for land owners within the floodplain, and formal designation of green-belts in the floodplains. Minimum structural alternatives include levies and setback levies to protect property during floods. Some alternatives were combinations of structural and non-structural solutions. Detailed information on this study may be obtained from the Army Corps of Engineers, or from the Washington Kayak Club's Conservation Committee.

The Middle Fork dam is only a part of the larger issue of the future of the Snohomish drainage basin, including the Snoqualmie and Skykomish River systems. If the Middle Fork Dam is built, others will almost certainly be built -- starting with one that is already being considered for the North Fork of the Snoqualmie. Limited flood protection very quickly leads to industrial development of the floodplain, as we have seen in the Green River Valley. Thus, the Snohomish Valley could very soon become an industrial area, with concomitant burial of more of the nation's richest farmland under concrete and asphalt, and loss of the ecologically important Snohomish Delta estuary.

For further information on the Snohomish Valley, see the following sections of the Natural Environment Appendix, included in the Land Use Packet: "Surface Water", "Geology: Ground Water", "Floodplain", "Productivity -- Food Producing Areas", and "Unsuitable Soils". This material is reprinted from the Everett Community Plan by Lawrence Halprin and Associates (the "Halprin Plan").

PRE-ACTIVITY: Introduce the issue.
Have students trace the Snoqualmie, Skykomish and Snohomish River drainage system on a map.
You might lead into a preliminary discussion with questions such as these:

"What experiences have you had on or along these rivers?"

"What do you think of when I say "Skykomish Valley"?-- "Snoqualmie Valley?" -- "Snohomish Valley?"

Divide the class arbitrarily into eight groups to role-play various interest groups (see Task Cards on following pages.)

ACTIVITY: Students research their interest-group's position and prepare a representative testimony to present at the public hearing. See the Introductory Packet ("Involvement in Environmental Issues....Process") for details on simulation game procedures.

County council hears testimony and makes its decision. (dam it or don't dam it!)

POST ACTIVITY: Discuss the results of the mock hearing, and the reasons for the decision given.

Bring in speakers from some of the involved interest groups to discuss the specific Middle Fork Dam issue and the larger Snohomish Floodplain management issue with the class.

Follow the actual resolution of the Middle Fork issue in the media. If the issue is not yet decided, encourage students to write their opinions to Governor Evans, Also follow other Snohomish Valley zoning developments (e.g., the Burlington Northern Switchyard issue).

Take a field trip to the Upper Middle Fork of the Snoqualmie River proposed damsite. (This could be combined with a hike to Snoqualmie Lake if the group is small and manageable.) Explore the Snohomish Delta by canoe or kayak. Contact George Yount at Mountlake Terrace Senior High School for trip suggestions.

INTEREST GROUP ASSIGNMENT CARDS:

MIDDLE FORK DAM SNOQUALMIE RIVER

Group I

King County Council

5-6 year study completed - requested by local citizens

1. Citizens requested safety from floods.
2. Choose best course for most people; establish criteria for judging.
3. Gather data for evaluation; listen to interest group testimony.
4. Make decision on information and testimony heard.
5. Set up format for hearings.

MIDDLE FORK DAM SNOQUALMIE RIVER

Group II

U.S. Army Corps of Engineers

1. Planned dam and total project.
2. The dam will save lives and property.
3. Estimated cost of dam: $49,000,000.
4. Hundreds of thousands of dollars flood damage to basin annually.

MIDDLE FORK DAM SNOQUALMIE RIVER

Group III

Cities of North Bend and Snoqualmie

1. Citizens have right to be prctected from flooding.
2. People have put life in their homes and property.
3. Economic implication.
4. Lake will add to economy by increasing recreation facilities.

MIDDLE FORK DAM SNOQUALMIE RIVER

Group IV

Farmers Cooperative

1. Loss of crops and livestock during floods.
2. Loss of home and personal belongings.
3. Storage behind dam will provide a more dependable and regular source of water.

ACTIVITY

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MIDDLE FORK DAM SNOQUALMIE RIVER

Group V

Sierra Club

1. More economical in long run to insure flood plain damages than to build dam.
2. Dam will soon be worthless because of silt settling behind dam.
3. Minerals collected behind dam may upset food chain at mouth of river.
4. Floodplain should be officially designated as a "Green-belt" and zoned for agricultural uses only.
5. Flood protection will lead to population influx into the valley, and Puget Sound already has too many people.

MIDDLE FORK DAM SNOQUALMIE RIVER

Group VI

Mountaineers

1. Destroy ecological balance of valley.
2. Note Aswan dam problems in Egypt.
3. a. Shrimp industry dying
   b. Fishing industry dying
   c. Soil fertility no longer being replenished by periodic flooding.
   d. Lake created more good breeding grounds for insects, and for snails which carry the schistosome parasite.

MIDDLE FORK SNOQUALMIE VALLEY

Group VII

Washington Kayak Club

1. There are only 3 remaining free-flowing rivers close to urban centers.
2. The dam represents one issue in the total Snohomish drainage system. We have to see how it and other projects affect the entire system.
3. The dam will spur development of the valley as in the Green River valley and cause greater damage from major floods in the future.
4. Non-structural alternatives (flood insurance, flood-plain zoning, etc.), are ecologically sound and more economical in the long run.

ACTIVITY

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MIDDLE FORK DAM SNOQUALMIE RIVER

Group VIII

Individuals

1. Land owner of flooded land. Bought land to live by river.
2. Stream fisherman. Need streams (free-flowing), no more lakes.
3. Hunter (Sportsman Club). Habitat of blacktail deer and other wildlife destroyed.
4. Other?

NOTE: The numbered points of concern on each card are suggestions only, and may not correspond exactly to the organization's official and current position. Students should be encouraged to contact representatives from the interest groups directly to obtain additional information and ideas.

If there is too little time for the class to research the interest group thoroughly, or if this is not necessary to meet the teacher's objectives, the students may simply use these suggestions and their own imagination to put together their testimony.

LAND USE BIBLIOGRAPHY

Allen, Durward L., The Life of Prairies and Plains, McGraw-Hill, New York 1967: (Our Living World of Nature Series). $4.95

Blake, Peter, God's Own Junkyard: The Planned Deterioration of America's Landscape, Holt, New York 1964. $4.50, $2.95

Brooks, Maurice, The Life of the Mountains, McGraw-Hill, 1967: (Our Living World of Nature Sereis). $4.95.

Campground and Trailer Park Guide, Rand McNally, 1971 New York: $4.95

Cannon, Julie, Timber Supply Act/Anatomy of a Battle, Sierra Club Bulletin, March, 1970 8-11.

Carter, Luther J., Timber Management: Improvement Implies New Land Use Policies, Science, 1970 170: 1387-1390.

Jepsen, Stanley M., Trees and Forests, New York: Barnes, 1969. $6.95

Judson, Sheldon, Erosion of the Land - Or What's Happending to Our American Continents?, American Scientist, 1968: 56, 356-374

Leavitt, Helen, Superhighway-Superhoax, Ballantine, New York 1970: $0.95 (A critical study of what the highways are doing to urban and rural areas.)

May, Julian, The Big Island, Follett, New York, 1968: $3.95 (Illustrated by John Schoenherr.)

McCormick, Jack, The Life of the Forest, McGraw-Hill, New York 1966: $4.95 (Our Living World of Nature Series)

Momaday, N. Scott, An American Land Ethic, Sierra Club Bulletin, 1970, February: 8-11

Rodale, Robert, Editor, The Basic Book of Organic Gardening, Ballantine, New York, 1970: $1.25

Sears, Publ B., The Living Landscape, Basic, New York, 1966: $4.95

The Public's Land-Our Heritage and Opportunity, Washington, D.C.: U.S. Government Printing Office - Summary of Public Land Management

Watkins, T. H., The Grand Canyon, American West Publishing Co. 1969: $15.00

LAND USE - FILMS

TITLE	TIME	COST	FILM #	COMPANY	GRADE
1. The Aging Lakes	14	Free	EF-1712	District	10-12
2. Automobiles: The Great Love Affair	54	"	EF-2165	"	11
3. The Boreal Forest	19	"	EF-1500	"	10-12
4. Bulldozed America	25	"	EF-2136	"	7-12
5. Cascade Mountains	20	"	EF-1005	"	6-12
6. The Dam Builders	30	"	EF-2184	"	5-12
7. The Desert	22	"	EF-2213	"	10-12
8. Downtowns For People	25	"	EF-2209	"	10-12
9. Great Plains, The From Green To Gold	15	"	EF-1392	"	5-12
10. Great Plains, The - Land Of Risk	15	"	EF-1392	"	3-9
11. Isreal: Making A Land Productive	17	"	EF-1652	"	7-9
12. Japan: The Land and The People	11	"	EF-474	"	3-9
13. Man, Beast, And The Land - 2 pts.	52	"	EF-2206	"	7-12